

AMERICAN SOCIETY OF CIVIL ENGINEERS

INSTITUTED 1852

PROCEEDINGS

This Society is not responsible for any statement made or opinion expressed in its publications.

SOCIETY AFFAIRS

CONTENTS

	PAGE
Minutes of Meetings:	
Of the Society, March 19th and April 2d, 1913.....	279
Of the Board of Direction, March 4th and April 2d, 1913.....	283
Report of Finance Committee on Salaries of Employees.....	285
Announcements:	
Hours during which the Society House is open.....	287
Future Meetings.....	287
Annual Convention.....	287
Searches in the Library.....	288
Papers and Discussions.....	288
Local Associations of Members of the American Society of Civil Engineers.....	289
Privileges of Engineering Societies Extended to Members.....	289
Accessions to the Library:	
Additions.....	292
By purchase.....	297
Membership (Additions, Changes of Address, Reinstatements, Resignations, Deaths).....	299
Recent Engineering Articles of Interest.....	300

MINUTES OF MEETINGS OF THE SOCIETY

March 19th, 1913.—The meeting was called to order at 8.40 p. m.; Director T. Kennard Thomson in the chair; Charles Warren Hunt, Secretary; and present, also, 130 members and 19 guests.

A paper by E. J. Schneider, M. Am. Soc. C. E., entitled "Construction Problems, Dumbarton Bridge, Central California Railway," was presented by the Secretary, and illustrated with lantern slides.

The Secretary also read a communication on the subject from L. J. Le Conte, M. Am. Soc. C. E., and the paper was discussed orally by Messrs. James B. French, J. A. Knighton, James Owen, O. E. Hovey, L. D. Rights, R. D. Coombs, and T. Kennard Thomson.

The Secretary announced the following deaths:

PHILIP HENRY COOMBS, elected Member, March 7th, 1906; died March 6th, 1913.

CHARLES SPEARMAN, elected Associate Member, October 5th, 1909; died August, 1912.

Adjourned.

April 2d, 1913.—The meeting was called to order at 8.35 P. M.; President George F. Swain in the chair; Chas. Warren Hunt, Secretary; and present, also, 140 members and 12 guests.

The minutes of the meetings of February 19th and March 5th, 1913, were approved as printed in *Proceedings* for March, 1913.

A paper by Lewis J. Johnson, M. Am. Soc. C. E., and John R. Nichols, Jun. Am. Soc. C. E., entitled "Shearing Strength of Construction Joints in Stems of Reinforced Concrete T-Beams, as Shown by Tests," was presented by Mr. Nichols.

The Secretary read a communication on the subject from L. J. Mensch, M. Am. Soc. C. E., and the paper was discussed orally by Messrs. J. P. Snow, David Gutman, E. E. Seelye, A. B. Heiser, H. G. Raff, G. C. Doyen, and T. H. Wiggin.

A paper by Joshua Fielden Ramsbotham, Assoc. M. Am. Soc. C. E., entitled "Fremantle Graving Dock: Steel Dam Construction for North Wall," was presented by title. The Secretary read a communication on the subject from A. R. Archer, Assoc. M. Am. Soc. C. E.

The Secretary announced the election of the following candidates on April 2d, 1913:

As MEMBERS

- ALFRED VICTOR BOUILLON, Seattle, Wash.
 - ALLAN THEODORE DUSENBURY, New Orleans, La.
 - JOSEPH WILTON ELLMS, Cincinnati, Ohio
 - JOSEPH DEAN EVANS, Montreal, Que., Canada
 - ALEXANDER GRAY, Ottawa, Ont., Canada
 - HERBRAND HARVEY, St. Johnsville, N. Y.
 - HENRI HERBERT HENDERSON, Stockton, Cal.
 - GEORGE B HERINGTON, La Fayette, La.
 - ALFRED ELMER HESS, Williamsport, Pa.
 - OWEN MERIWETHER JONES, Sault Ste. Marie, Mich.
 - GEORGE BERTRAM DE BETHAM KERSHAW, West Wickham, England
 - FELIX JOHN KERSTING, Leavenworth, Kans.
 - STUART KELSEY KNOX, East Orange, N. J.
 - VICTOR HUGO KRIEGSHABER, Atlanta, Ga.
 - ARTHUR BARRETT MILLER, New York City
 - JOHN PORTMAN PAGET, Guayaquil, Ecuador
 - LEWIS FREDERICK PATSTONE, Ada, Ohio
- #### As ASSOCIATE MEMBERS
- FRANK HICKS ADAMS, Wiggins, Colo.
 - JUAN BATISTE HIPOLYTE BARDURY, Guayama, Porto Rico
 - DUDLEY SEYMOUR BRIGHT, Pittsburgh, Pa.
 - ARTHUR STACEY RUSS, High Falls, N. Y.
 - JAMES RETZER COMLY, San Diego, Cal.
 - ROBERT EMMET CULLEN, Peak, S. C.

ROBERT CURTIS CUTTING, Hogsett, W. Va.
ARTHUR ALBERT DAVIS, Bethlehem, Pa.
ERNEST BUEL DAY, New York City
CHARLES THOMAS DELAMERE, Port Arthur, Ont., Canada
HARRY JOCELYN DIGNUM, Preston, Oriente, Cuba
WILLIAM FREDERICK FARLEY, Montreal, Que., Canada
GUSTAF ADOLF FLINK, Harrisburg, Pa.
NORMAN PAUL GERHARD, Scarsdale, N. Y.
HENRY MCCORMICK GROSS, Harrisburg, Pa.
FREDERIC HAMILTON HILL, Wilmington, Del.
JAMES CAREY JORDAN, Pittsburgh, Pa.
HENRY LARSEN, Portland, Ore.
RALPH JORDAN LAWRENCE, Philadelphia, Pa.
JAMES BENNETT LOWELL, Worcester, Mass.
JOSEPH DAVIS METCALFE, Caldwell, Tex.
JAMES BLAINE MILLER, Washington, D. C.
EDGAR HENRY MIX, Venice, Cal.
JAMES ALEXANDER MOFFAT, Spuzzum, B. C., Canada
SHERMAN MOORE, Detroit, Mich.
EVERETT BODMAN MURRAY, Kansas City, Mo.
WILLIAM HOGARTH ROBERTSON NIMMO, Vancouver, B. C., Canada
GEORGE BUSHNELL PALMER, New York City
JOHN LOUIS PICKLES, Duluth, Minn.
RAYMOND EDGAR REYNOLDS, Buffalo, N. Y.
FREDERICK CHARLES SCOBey, Washington, D. C.
EDWARD LEWIS SHEPARD, East Lansing, Mich.
HARRY EVANS SOVEREIGN, Grand Valley, Colo.
HARRY STOCK, Chicago, Ill.
FRANK THORN TOWNSEND, Buffalo, N. Y.
HASWELL ROGER WILLIAMS, Baltimore, Md.
HARRY DUGAN WILLIAR, Jr., Baltimore, Md.
FREDERICK CARL YOUNGBLUTT, Savage, Mont.

AS ASSOCIATE

HERBERT CHASE TITUS, Albany, N. Y.

AS JUNIORS

ROBERT CREWDSON BENSON, Tatura, Victoria, Australia
HAROLD EDWIN CURTIS, St. Albert, Alta., Canada
REX EDWARD EDGECOMB, Corvallis, Ore.
HAROLD BERNARD HAMMILL, Berkeley, Cal.
ADOLF HINRICHS, Brooklyn, N. Y.
CARL WAYNE MENGEL, Norfolk, Va.
ROBERT ANSLEY MONROE, Berkeley, Cal.
ALEC ALFRED PLUMMER, Vancouver, B. C., Canada
HORATIO SEYMOUR, Jr., Storm King, N. Y.

The Secretary announced the transfer of the following candidates on April 2d, 1913:

FROM ASSOCIATE MEMBER TO MEMBER

WALTER CHEW BARTON, New Orleans, La.
LUTHER HAROLD BURT, Hartford, Conn.
JOHN SOULE BUTLER, Nashville, Tenn.
GEORGE ALBERT HAYNES, Waukesha, Wis.
CHARLES WILSON KILLAM, Cambridge, Mass.
JOHN MARTIN, New York City
OSCAR CHARLES MERRILL, San Francisco, Cal.
JAMES BOORMAN STRONG, Hillburn, N. Y.

FROM ASSOCIATE TO MEMBER

EDWARD MICHAEL GRAVES, Cleveland, Ohio

FROM JUNIOR TO ASSOCIATE MEMBER

JAMES NORTH EDY, Billings, Mont.
WALLACE HAYNES HALSEY, Bridgehampton, N. Y.
JOHN GIBSON HENDRIE, Brighton, Trinidad
GRANVILLE JOHNSON, Jamaica Plain, Mass.
GEORGES PIERRE FERDINAND JOUINE, Vicksburg, Miss.
GEORGE GLENN MCDANIEL, San Francisco, Cal.
FRANK JOHNSON TRELEASE, Buffalo, N. Y.

The Secretary announced the following deaths:

PETER SUTHER ARCHIBALD, elected Member, January 7th, 1885; died March 16th, 1913.

CHARLES KELLOGG, elected Member, June 2d, 1880; died March 23d, 1913.

EMIL EDWARD KUERSTEINER, elected Member, December 1st, 1897; died March 10th, 1913.

JOHN STUART ELLIOTT, elected Associate Member, April 6th, 1892; died March 25th, 1913.

Adjourned.

OF THE BOARD OF DIRECTION

(Abstract)

March 4th, 1913.—President Swain in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Bates, Bush, Clarke, Gerber, Hodge, Leonard, Metcalf, Ridgway, Smith, Snow, Thomson, and Wallace.

The proposed re-districting of the Society for the purpose of the Nominating Committee was considered in a report received from a sub-committee appointed by the Board for the purpose, and the proposed amendment, as prepared by that Committee, was approved, and the Committee instructed to secure signatures enough to bring the matter legally before the Society.*

The Secretary reported that Messrs. Chas. D. Marx, W. A. Cattell, Arthur L. Adams, and Chas. Derleth, Jr., have accepted their appointment by the Board, to represent this Society on the General Committee in charge of The International Engineering Congress, 1915.

The application of a woman for admission to the Society was declined, for the reason that the Board is of the opinion that the Constitution of the Society does not contemplate the admission of women.

The resignations of 1 Member and 3 Associate Members were accepted, and the resignation of 1 Associate was accepted as taking effect December 31st, 1913.

Ballots for membership were canvassed resulting in the election of 16 Members, 23 Associate Members, and 11 Juniors, and the transfer of 10 Juniors to the grade of Associate Member.

Nine Associate Members were transferred to the grade of Member. Applications were considered, and other routine business transacted.

Adjourned.

April 2d, 1913.—President Swain in the chair; Chas. Warren Hunt, Secretary; and present, also, Messrs. Edwards, Endicott, Gerber, Leonard, Macdonald, Metcalf, Ridgway, Smith, Snow, and Thomson.

The Finance Committee presented a report covering the work of the employees of the Society and their salaries, which was received and ordered published in *Proceedings* for the information of the membership.†

A letter-ballot of the whole Board (ordered February 4th, 1913) on the question as to whether the salary of the Secretary shall be increased from \$10 000 to \$12 000 per annum was canvassed. Every member of the Board, except the Secretary, cast a ballot, with the result that the question was decided in the affirmative.

* This amendment has been mailed to all members.

† This report will be found on page 285.

A telegram addressed to the Chairman of the Assembly Committee on Public Education at Albany, N. Y., protesting against the passage of Assembly Bill No. 1126 for the Licensing of Civil Engineers was adopted and forwarded.

The President was requested to write to the Governor of New York, calling attention to the attitude of this Society on the proposed Bill, and on the general subject of the Licensing of Engineers.

Ballots for membership were canvassed, resulting in the election of 17 Members, 38 Associate Members, 1 Associate, and 9 Juniors, and the transfer of 7 Juniors to the grade of Associate Member.

Eight Associate Members and 1 Associate were transferred to the grade of Member.

Applications were considered and other routine business transacted.

Adjourned.

The resignations of 1 Member and 3 Associate Members were accepted, and the resignation of 1 Associate was accepted as taking effect December 31st, 1913. Ballots for membership were canvassed resulting in the election of 16 Members, 32 Associate Members, and 11 Juniors, and the transfer of 10 Juniors to the grade of Associate Member. Nine Associate Members were transferred to the grade of Member. Applications were considered, and other routine business transacted.

Adjourned.

April 26, 1914.—President Swain in the chair; Charles W. Brown, Treasurer; and Messrs. Edward E. Lusk, George H. Brown, and Thomas J. Brown, Secretaries.

The Finance Committee presented a report covering the work of the employees of the Society and their salaries, which was received and ordered published in Proceedings for the information of the membership.

A letter from the whole Board (dated February 11th, 1913) on the question as to whether the salary of the Secretary shall be increased from \$10,000 to \$12,000 per annum was canvassed. Every member of the Board, except the Secretary, cast a ballot with the result that the question was decided in the affirmative.

* This amendment has been mailed to all members.
† The report will be found on page 285.

**REPORT OF THE FINANCE COMMITTEE
TO THE BOARD OF DIRECTION
OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS***

Received April 2d, 1913.

The Finance Committee reports that it has conferred with the Secretary regarding the number of employees of the Society, the amount and character of the work performed by each, and the salaries paid to them; and has visited the various departments during working hours, and inspected the work being done.

The Committee was impressed with the large amount of detailed work required to successfully conduct the work of the Society, maintain its library and records, and render prompt service to its members. It is of the opinion that the work is being efficiently and economically done, that the number of employees now upon the payroll is necessary to properly handle the work, and that the salaries paid are consistent with the character and amount of work accomplished.

The following is a list of the present employees, with their salaries:

	Per Annum.
Office Assistant.....	\$2 800
Ass't. Editor.....	1 080
Bookkeeper.....	1 380
Ass't. Bookkeeper.....	660
Membership Clerk.....	1 080
Stenographer.....	900
“.....	900
“.....	780
“.....	780
Address Clerk.....	780
“.....	780
Clerk.....	720
Typist.....	480
Mailing Clerk.....	720
Junior Clerk.....	408
“.....	336
“.....	252
“.....	252
“.....	252
Hall Boy.....	252
“.....	156
Librarian.....	2 100
Ass't. Librarian.....	1 080
“.....	900
“.....	900
“.....	660
Janitor.....	720
Ass't. Janitor.....	468
	\$22 576

* Published for the information of members. by order of the Board.

The Society also has the following salaried officers:

	Per Annum.
Secretary	\$10 000
Ass't. Secretary	3 000
Treasurer	100 \$13 100

These salaries are divided by departments as follows:

GENERAL:		
Secretary	\$10 000	
Treasurer	100	\$10 100

EDITORIAL:		
Ass't. Secretary	\$3 000	
Ass't. Editor	1 080	4 080

LIBRARY:		
Librarian	\$2 100	
4 Ass't. Librarians	3 540	5 640

CARETAKING:		
Janitor and Ass't.	\$1 188	
2 Hall Boys	408	1 596

GENERAL OFFICE:		
Chief Office Assistant		2 800

Membership:		
2 Clerks		1 800

Bookkeeping:		
2 Bookkeepers		2 040

Office Work:		
4 Stenographers	\$3 360	
2 Address Clerks	1 560	
1 Typist	480	
1 Mailing Clerk	720	
5 Junior Clerks	1 500	7 620

\$35 676

LINCOLN BUSH,
GEORGE C. CLARKE,
HENRY W. HODGE,
LEONARD METCALF,
EMIL GERBER,
GEORGE F. SWAIN, *Ex-officio*,
Finance Committee.

ANNOUNCEMENTS

The House of the Society is open from 9 A. M. to 10 P. M., every day, except Sundays, Fourth of July, Thanksgiving Day, and Christmas Day.

FUTURE MEETINGS

May 7th, 1913.—8.30 P. M.—A regular business meeting will be held, and two papers will be presented for discussion, as follows: "Colorado River Siphon," by George Schobinger, Jun. Am. Soc. C. E.; and "Tidal Phenomena in the Harbor of New York," by H. de B. Parsons, M. Am. Soc. C. E.

Mr. Schobinger's paper was printed in *Proceedings* for March, 1913, and Mr. Parsons' paper is printed in this number of *Proceedings*.

May 21st, 1913.—8.30 P. M.—Two papers will be presented for discussion at this meeting, as follows: "Recent Improvements in Leveling Instruments," by Dumbard D. Scott, M. Am. Soc. C. E.; and "Statistical Limitations Upon the Steel Requirement in Reinforced Concrete Flat Slab Floors," by John R. Nichols, Jun. Am. Soc. C. E.

These papers are printed in this number of *Proceedings*.

June 4th, 1913.—8.30 P. M.—This will be a regular business meeting. A paper by Maurice G. Parsons, Jun. Am. Soc. C. E., entitled "The Philosophy of Engineering," will be presented for discussion.

This paper is printed in this number of *Proceedings*.

ANNUAL CONVENTION

The Forty-fifth Annual Convention of the Society will be held at Ottawa, Ont., Canada, from June 17th to 20th, 1913, inclusive.

The general arrangements for the Convention are in the hands of the following Committees:

COMMITTEE OF THE BOARD OF DIRECTION

CHARLES H. RUST, *Chairman*,

HENRY W. HODGE, CHAS. WARREN HUNT.

LOCAL COMMITTEE

CHAS. H. KEEFER, *Chairman*,

W. H. BREITHAUP,	H. HOLGATE,	JOHN KENNEDY,
S. J. CHAPLEAU,	J. A. JAMIESON,	WILLIAM McNAB,
C. R. F. COUTLEE,	PHELPS JOHNSON,	C. H. MITCHELL,
A. R. DUFRESNE,	T. C. KEEFER,	H. R. SAFFORD,
G. H. DUGGAN,	H. G. KELLEY,	W. F. TYE,
Sir SANDFORD FLEMING,		G. W. VOLCKMAN,

A preliminary circular has been sent to all members, and, as soon as arrangements have been completed, an additional circular will be issued.

SEARCHES IN THE LIBRARY

In January, 1902, the Secretary was authorized to make searches in the Library, upon request, and to charge therefor the actual cost to the Society for the extra work required. Since that time many searches have been made, and bibliographies and other information on special subjects furnished.

The resulting satisfaction, to the members who have made use of the resources of the Society in this manner, has been expressed frequently, and leaves little doubt that, if it were generally known to the membership that such work would be undertaken, many would avail themselves of it.

The cost is trifling compared with the value of the time of an engineer who looks up such matters himself, and the work can be performed quite as well, and much more quickly, by persons familiar with the Library.

In asking that such work be undertaken, members should specify clearly the subject to be covered, and whether references to general books only are desired or whether a complete bibliography, involving search through periodical literature, is desired.

In reference to this work, the Appendices* to the Annual Reports of the Board of Direction for the years ending December 31st, 1906, and December 31st, 1910, contain summaries of all searches made to date.

PAPERS AND DISCUSSIONS

Members and others who take part in the oral discussions of the papers presented are urged to revise their remarks promptly. Written communications from those who cannot attend the meetings should be sent in at the earliest possible date after the issue of a paper in *Proceedings*.

All papers accepted by the Publication Committee are classified by the Committee with respect to their availability for discussion at meetings.

Papers which, from their general nature, appear to be of a character suitable for oral discussion, will be published as heretofore in *Proceedings*, and set down for presentation to a future meeting of the Society, and, on these, oral discussions, as well as written communications, will be solicited.

All papers which do not come under this heading, that is to say, those which from their mathematical or technical nature, in the opinion of the Committee are not adapted to oral discussion, will not be scheduled for presentation to any meeting. Such papers will be published in *Proceedings* in the same manner as those which are to be presented at meetings, but written discussions, only, will be requested for subsequent publication in *Proceedings* and with the paper in the volumes of *Transactions*.

* *Proceedings*, Vol. XXXIII, p. 20 (January, 1907); Vol. XXXVII, p. 28 (January, 1911).

LOCAL ASSOCIATIONS OF MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

San Francisco Association

The San Francisco Association of Members of the American Society of Civil Engineers holds regular bi-monthly meetings, with banquet, and weekly informal luncheons. The former are held at 6 P. M., at the Palace Hotel, on the third Friday of February, April, June, August, October, and December, the last being the Annual Meeting of the Association.

Informal luncheons are held at 12.15 P. M. every Wednesday, and the place of meeting may be ascertained by communicating with the Secretary of the Association E. T. Thurston, Jr., M. Am. Soc. C. E., 713 Mechanics' Institute, 57 Post Street.

The by-laws of the Association provide for the extension of hospitality to any member of the Society who may be temporarily in San Francisco, and any such member will be gladly welcomed as a guest.

Colorado Association

The meetings of the Colorado Association of Members of the American Society of Civil Engineers are held on the second Saturday of each month, except July and August. The hour and place of meeting are not fixed, but this information will be furnished on application to the Secretary, Gavin N. Houston, M. Am. Soc. C. E., 409 Equitable Building, Denver, Colo. The meetings are usually preceded by an informal dinner. Members of the American Society of Civil Engineers will be welcomed at these meetings.

Weekly luncheons are held on Wednesdays, and, until further notice, will take place at the Colorado Traffic Club.

Visiting members are urged to attend the meetings and luncheons.

Atlanta Association

On March 14th, 1912, the Atlanta Association of Members of the American Society of Civil Engineers was organized, with the following officers: Arthur Pew, President; William A. Hansell, Jr., Secretary; and Messrs. James N. Hazlehurst and Alexander Bonnyman, Members of the Executive Committee. The Association will hold its meetings in the house of the University Club.

PRIVILEGES OF ENGINEERING SOCIETIES EXTENDED TO MEMBERS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS

Members of the American Society of Civil Engineers will be welcomed by the following Engineering Societies, both to the use of their Reading Rooms and at all meetings:

**American Institute of Mining Engineers, 29 West Thirty-ninth Street,
New York City.**

**American Society of Mechanical Engineers, 29 West Thirty-ninth
Street, New York City.**

Architekten-Verein zu Berlin, Wilhelmstrasse 92, Berlin W. 66, Germany.

Associação dos Engenheiros Cívis Portuguezes, Lisbon, Portugal.

Australasian Institute of Mining Engineers, Melbourne, Victoria, Australia.

Boston Society of Civil Engineers, 715 Tremont Temple, Boston, Mass.

Brooklyn Engineers' Club, 117 Remsen Street, Brooklyn, N. Y.

Canadian Society of Civil Engineers, 413 Dorchester Street, West, Montreal, Que., Canada.

Civil Engineers' Society of St. Paul, St. Paul, Minn.

Cleveland Engineering Society, Chamber of Commerce Building, Cleveland, Ohio.

Cleveland Institute of Engineers, Middlesbrough, England.

Dansk Ingeniorforening, Amaliegade 38, Copenhagen, Denmark.

Engineers' and Architects' Club of Louisville, Ky., 303 Norton Building, Fourth and Jefferson Streets, Louisville, Ky.

Engineers' Club of Baltimore, Baltimore, Md.

Engineers' Club of Minneapolis, 17 South Sixth Street, Minneapolis, Minn.

Engineers' Club of Philadelphia, 1317 Spruce Street, Philadelphia, Pa.

Engineers' Club of St. Louis, 3817 Olive Street, St. Louis, Mo.

Engineers' Club of Toronto, 96 King Street, West, Toronto, Ont., Canada.

Engineers' Society of Northeastern Pennsylvania, 302 Board of Trade Building, Scranton, Pa.

Engineers' Society of Pennsylvania, 219 Market Street, Harrisburg, Pa.

Engineers' Society of Western Pennsylvania, 2511 Oliver Building, Pittsburgh, Pa.

Institute of Marine Engineers, 58 Romford Road, Stratford, London, E., England.

Institution of Engineers of the River Plate, Buenos Aires, Argentine Republic.

Institution of Naval Architects, 5 Adelphi Terrace, London, W. C., England.

Junior Institution of Engineers, 39 Victoria Street, Westminster, S. W., London, England.

Koninklijk Instituut van Ingenieurs, The Hague, The Netherlands.

Louisiana Engineering Society, 321 Hibernia Bank Building, New Orleans, La.

Memphis Engineering Society, Memphis, Tenn.

Montana Society of Engineers, Butte, Mont.

Oesterreichischer Ingenieur- und Architekten-Verein, Eschenbachgasse 9, Vienna, Austria.

Rochester Engineering Society, Rochester, N. Y.

Sociedad Colombiana de Ingenieros, Bogota, Colombia.

Société des Ingénieurs Civils de France, 19 Rue Blanche, Paris.

Society of Engineers, 17 Victoria Street, Westminster, S. W.,

Svenska Teknologforeningen, Brunkebergstorg 18, Stockholm.

Tekniske Forening, Vestre Boulevard 18-1, Copenhagen, Denmark.

ACCESSIONS TO THE LIBRARY

(From March 5th to April 1st, 1913)

DONATIONS*

RIVER DISCHARGE.

Prepared for the Use of Engineers and Students. By John Clayton Hoyt, M. Am. Soc. C. E., and Nathan Clifford Grover, Assoc. M. Am. Soc. C. E. Second Edition, Revised and Enlarged. Cloth, 9½ x 6 in., illus., 12 + 173 pp. New York, John Wiley & Sons; London, Chapman & Hall, Limited, 1912. \$2.00.

In this book, the authors, it is stated, have considered the methods of measuring and computing stream flow, the laws which govern such measurements, the phenomena which affect the flow of streams, and the uses to which the data can be applied. The first edition was published in 1907 since which time material advance, it is said, has been made in the development of methods and instruments for stream gauging due to the work of the engineers of the Water Resources Branch of the United States Geological Survey. The Survey's methods have been accepted as standards in this country, it is stated, and have been adopted and used in hydraulic developments by engineers in all parts of the world. In this, the second edition, the authors state that they have attempted to incorporate the latest practice in the subject, the chapter on instruments and equipment having been wholly rewritten and that on the compilation and use of data having been revised and enlarged. Other minor changes and additions have been made, the latter including maps showing the mean annual precipitation and run-off in the United States. The Contents are: Introduction; Instruments and Equipment; Velocity-Area Stations; Weir Stations; Discussion and Use of Data; Conditions Affecting Stream Flow; Tables; Index.

EARTHWORK HAUL AND OVERHAUL.

Including Economic Distribution. By J. C. L. Fish, M. Am. Soc. C. E. Cloth, 9½ x 6 in., illus., 14 + 165 pp. New York, John Wiley & Sons; London, Chapman & Hall, Limited, 1913. \$1.50.

All questions relating to the computation of overhaul and the use of the mass curve in planning distribution, are, the preface states, answered in this book. The subject-matter is divided into two parts. Part I, Haul and Overhaul, is planned for the use of students and teachers, railroad contractors, computers, and railroad engineers. In this part, Chapters I to V are recommended to students of overhaul, in school or out, as they contain, it is said, a full presentation of each of the elements of overhaul computation. Descriptions of bases and methods of overhaul computation are given in Chapters V, VI, and VII, which, it is stated, railroad contractors will find useful in coming to a definite understanding with railroad engineers as to the way in which overhaul shall be computed. Chapters VI and VII may also be of use to railroad engineers and computers in determining a method of computation and a complete plan of procedure under such method. Part II, Economic Distribution of Material Along the Profile, is devoted, the preface states, to the elements of the problem of economic distribution and presents a thorough treatment of the solution of this problem by the use of the mass curve. The Chapter headings are: Part I, Haul and Overhaul: Considerations Preliminary to the Computation of Haul; The Mass Curve; Limits and Center of Mass of a Body of Material; Center of Gravity; Overhaul, Free Haul, and Cross Haul; Overhaul Computed for the Simple Case of Fig. 19; Overhaul Computed for the Complex Case of Fig. 38. Part II, Economic Distribution of Material Along the Profile: Preliminary Considerations; Economic Balancing Line for Mass Curve Plotted from Cut-Volumes and Equated Fill-Volumes, etc.; Economic Balancing Line for Mass Curve Plotted from Fill-Volumes and Equated Cut-Volumes; Index.

RATIONAL AND APPLIED MECHANICS.

By Calvin Milton Woodward. Cloth, 9½ x 6½ in., illus., 8 + 517 pp. St. Louis, Mo., Nixon-Jones Printing Company, 1912. \$4.00. (Donated by the Author.)

It is stated in the preface that this book was written primarily for students entering upon their second collegiate year. Their knowledge of mechanics being limited to what they have gained during their study of physics and from practice in the laboratory and shop, the author aims to take them by logical steps from

* Unless otherwise specified, books in this list have been donated by the publishers.

the purely elementary to the higher mathematical treatment of the subject and to make every step reasonable and every demonstration intelligible, in order that they may learn to follow statements made in the language of mathematics and mechanics. The subject-matter, it is stated, has not been confined to any one branch of Engineering or Architecture, the object being to make it possible for the student in any technical branch to read intelligently and use carefully prepared papers and manuals and to solve new problems as they arise. No attempt has been made to multiply problems, clear illustrations of general principles and useful methods of analysis only being included. The author states that he has used abstract problems freely with those which approximate more or less closely real ones. With the abstract problems he has aimed to illustrate general methods, establish general laws, and derive general formulas and then apply them to the solutions of problems derived from all sorts of sources and conditions. Matter relating to commercial and cost data has been omitted, and the author has adopted that order for his subjects, it is stated, which will meet the needs of the engineering student who early in his professional study takes up frames and structures. The Contents are: Introduction, Part I, Statics: Co-Linear Forces; Parallel Forces Which Balance; Converging Forces in a Plane; Non-Converging Forces in a Plane; Forces in Space; Centroids of Surfaces; Centres of Gravity; Moments of Inertia of Surfaces; Elementary Graphical Statics; Internal Stress. Part II, Kinetics: Translation Under Constant Forces; Translation Under Varying Forces; Moments of Inertia of Solids; Deviating Forces; Kinematics; Work and Energy; Elasticity; Graphical Representations of Shear, etc.; Shearing Stress; Beams of Uniform Strength; Work in a Bent Beam, etc.; The Stability of Foundations and Retaining Walls; Eccentric Loading of Short Columns; The Energy of Streams of Water and Air; The Efficiency of Compressed Air; Appendix: Four-Place Logarithms; Index.

PSYCHOLOGY AND INDUSTRIAL EFFICIENCY.

By Hugo Münsterberg. Cloth, $8\frac{1}{2} \times 5\frac{1}{2}$ in., 8 + 321 pp. Boston and New York, Houghton Mifflin Company, 1913. \$1.50.

The author's aim in this book, it is stated, has been to sketch the outlines of a new science which is intermediate between the modern laboratory psychology and the problems of economics, and to demonstrate the principles and methods of such experimental economic psychology by characteristic illustrations. To that end he has selected for discussion herein three central purposes which occur in every department of business life, namely (1) how to find the man whose mental qualities make him best fitted for the work; (2) under what psychological conditions can the greatest and most satisfactory output of work be secured from every man; and (3), how completely can the influences on human minds which are desired in the interest of business, be produced. The Contents are: Introduction; Applied Psychology; The Demands of Practical Life; Means and Ends. I, The Best Possible Man: Vocation and Fitness; Scientific Vocational Guidance; Scientific Management; The Methods of Experimental Psychology; Experiments in the Interest of Electric Railway Service; Experiments in the Interest of Ship Service; Experiments in the Interest of Telephone Service; Contributions from Men of Affairs; Individuals and Groups. II, The Best Possible Work: Learning and Training; The Adjustment of Technical to Physical Conditions; The Economy of Movement; Experiments on the Problem of Monotony; Attention and Fatigue; Physical and Social Influences on the Working Power. III, The Best Possible Effect: The Satisfaction of Economic Demands; Experiments on the Effects of Advertisements; The Effect of Display; Experiments with Reference to Illegal Imitation; Buying and Selling; The Future Development of Economic Psychology; Notes; Index.

MINING ENGINEERS' EXAMINATION AND REPORT BOOK.

By Charles Janin. Part I, Leather, $7\frac{1}{2} \times 5\frac{1}{2}$ in., illus., 94 pp.; Part II, Boards, $5 \times 7\frac{1}{2}$ in., 57 pp. San Francisco, The Mining and Scientific Press; London, The Mining Magazine, 1913. \$2.50.

This work which, it is stated, has been arranged to assist prospectors, owners, promoters, etc., in presenting a concise and comprehensive report on mines and mining properties, is divided into two parts. Part I is a handbook and contains information and tables leading up to an enumeration of the points which a complete report should cover. The examination of placers is discussed, and an outline of a placer report is given as well as methods and costs of sampling with Keystone and Empire hand drills. Detailed instructions for filling out the blanks given in Part II are also included. Part II is a skeleton report and may be used as a field note-book, from which, it is stated, the final report may be readily dictated. The Contents are: Examination of Mines; Examination of Placers; Examination of Title; Blank Forms; Miscellaneous Suggestions and Information; Classification of Igneous Rocks; Study of Ore Deposits; Representative Costs; Miscellaneous Tables and Data; Index.

STABILITY IN AVIATION

An Introduction to Dynamical Stability as Applied to the Motions of Aeroplanes. By G. H. Bryan. (Macmillan Science Monographs.) Cloth, 9 x 6 in., illus., 10 + 192 pp. London, Macmillan and Co., Limited, 1911. \$2.00.

The problem of stability in connection with aviation has not received, it is stated, that attention which it deserves by mathematicians, and it is hoped that, as much of the loss of life and damage to property could be avoided by a systematic study of aeroplane stability and of certain other problems regarding the motion of aeroplanes discussed in this book, its publication may lead to further study and investigation of the subject. As discussed by the author, attention is said to have been concentrated on the mathematical aspect of the problem for several reasons: (1) because the development of the mathematical theory must be done thoroughly or not at all; (2) the formulas obtained could only have been established by mathematical theory; (3) as there has seemed to be no lack of competent workers interested in the practical and experimental side of aviation, as much weight as possible should be thrown on the mathematical side of the question in order to improve the balance between theory and practice; and (4) it is hoped to advocate the claims of aeroplane equilibrium and stability as studies in colleges and universities with such branches as applied mathematics, etc. The motions or changes of motion set up in the flying machine itself by air pressures and by the other forces acting on it when equilibrium in steady motion is disturbed is, it is stated, the problem discussed and the author shows that there should be no difficulty in securing inherent stability, both longitudinal and lateral, in an aeroplane, by means of suitably placed auxiliary surfaces rigidly attached to the machine. The Chapter headings are: Introduction and Summary; Fundamental Principles; General Considerations Regarding Symmetrical Derivatives; Graphic Statics of Longitudinal Equilibrium; Longitudinal Stability of Single-Lifting Surfaces; Longitudinal Stability of Double-Lifting Systems; Asymmetric or "Lateral" Stability-Straight Planes and Vertical Fins; Lateral Stability Bent-Up Planes; General Conclusions; Comparison with Other Theories; Problems, Notes, Nomenclature, Notation; Index.

ENGINEERS' HANDBOOK ON PATENTS.

By William Macomber. Leather, 7 x 4½ in., illus., 15 + 288 pp. Boston, Little, Brown and Company, 1913. \$2.50.

The engineer, the author states, is coming to be the Yankee inventor raised to the nth power, and as such should be familiar with the patent law. This book, it is said, is a handbook, not a textbook, on that subject, in which the author states in a practical manner, omitting legal phraseology and terminology, those things which the inventor, the industrial leader, and especially the engineer should know concerning Patent Office procedure. In it he discusses the various problems relating to patents, that is, how to obtain one, what one covers, what it protects, what must be avoided, the general course and trend of patent litigation, the problem of property rights in patents, etc. The Contents are: Introductory; What is a Patent? The Nature of Invention; What is Patentable; Patentable Novelty; The Obtaining of Patents; Claim Construction; Infringement; Patent Litigation; Property Rights; Index.

MODERN PARK CEMETERIES.

By Howard Evarts Weed. Cloth, 7½ x 5 in., illus., 145 pp. Chicago, R. J. Haight, 1912. \$1.60.

The author's aim in this book, it is stated, is to furnish information relating to the construction and management of cemeteries, in a practical and concise form. It is hoped that cemetery officials will find the volume useful in disseminating modern ideas on the subject and in educating lot owners as to modern conditions in order that many present-day cemeteries may be improved. The Chapter headings are: Cemetery History and Burial Customs in America; The Organization and Ownership of Cemeteries; The Proper Location for a Cemetery; The Cemetery Plan; General Construction Work; Road Construction; Landscape Development; The Superintendent and His Duties; Mausoleums, Monuments, and Headstones; Rules and Regulations; Perpetual Care Fund; Cemetery Records; The Cemetery Buildings; Charges for Lot and General Services; The Improvement of Old Cemeteries; Cremation; Cemetery Law; Cemetery Literature and the A. A. C. S.

CYANIDE PRACTICE IN MEXICO.

By Ferdinand McCann. Cloth, $9\frac{1}{4} \times 6$ in., illus., 194 pp. San Francisco, The Mining and Scientific Press; London, The Mining Magazine, 1912. \$2.00.

The preface states that this volume consists largely of extracts from a Spanish book by the author entitled "Beneficio de Metales de Plata y Oro por Cianuración." These extracts have been revised, and new material has been added, it is stated, in order to embody the latest practice in various Mexican mills. The book contains, it is said, an accurate detailed description of the equipment and practice at all the important cyanide plants in Mexico, and as Mexican practice deals especially with the cyanidation of silver ores, the author hopes that the volume will be an acceptable addition to the literature on that subject. Many illustrations are given, including the flow sheets of many representative mills. The Contents are: Historical Outline of the Cyanide Process; Various Systems of Treatment; Cyanide Practice of the El Oro Mining & Railway Co., El Oro, Mexico; The Dos Estrellas Co., Tlalpujahua, Michoacan; The Mexico Mines of El Oro, Ltd., El Oro, Mexico; The Esperanza Mining Co., El Oro, Mexico; The Guanajuato Consolidated Mining & Milling Co., Guanajuato, Mexico; The Real del Monte y Pachuca Co., Pachuca, Hidalgo; In the Tailing Plant of the Blaisdell Coscotitlan Syndicate, Pachuca, Hidalgo; In the San Francisco Mill No. 1 of the Compañía Beneficiadora de Metales, Pachuca, Hidalgo; Of the San Rafael y Anexas Co., Pachuca, Hidalgo; At the Plant of the Lucky Tiger Combination Gold Mining Co., El Tigre Sonora, by D. L. H. Forbes; At the Veta Colorado, Parrel, Chihuahua, by Bernard McDonald; Cyanide Practice in Small Mills; Continuous Cyanide Treatment in Connection with Pachuca Tank; Cyanidation in Pan-Amalgamation Mills Without Change in the Machinery; Precipitation on Metallic Zinc; Treatment of Cyanide Precipitates; Index.

THE MINING WORLD INDEX

Of Current Literature, Vol. II, July-December, 1912. By George E. Sisley. Cloth, $9\frac{1}{4} \times 6$ in., 24 + 234 pp. Chicago, Mining World Company, 1913. \$2.00. (Donated by *Mining and Engineering World*.)

The first volume of this Index was issued in August, 1912, and covered the first six months of that year. As stated in the title, this, the second volume, includes the period from July to December, 1912, and covers the field of the world's current literature of mining, metallurgy, and the allied industries. The subject-matter is a revise of the Index of the same subjects published weekly in the *Mining and Engineering World*, and is stated to have been issued in book form for the benefit of engineers and others who wish to keep in touch with the progress made in mining, metallurgy, etc. Some changes have been made, it is said, in the arrangement of the present volume with a view to making reference easier, the entries being alphabetical by author under the subject and including author, title of article (titles in foreign languages are usually followed by a translation or explanation in English), a brief amplification or explanation when the title is insufficient, the journal in which the article appeared, with the date and page number, the approximate number of words in the article, and the price, which arrangement, it is hoped, will be of benefit to those whose library facilities are limited. The Contents are: Part I, Ores and Mineral Products; Metals and Metal Ores; Non-Metals. Part II, Technology: Mines and Mining; Mill and Milling; Metallurgy and Chemistry; Power and Machinery. Part III, Miscellaneous.

ELECTRIC LIGHTING AND MISCELLANEOUS APPLICATIONS OF ELECTRICITY.

A. Text Book for Technical Schools and Colleges. By William Suddards Franklin. Half Roan, $8\frac{1}{2} \times 5\frac{1}{2}$ in., illus., 7 + 299 pp. New York, The Macmillan Company; London, Macmillan & Co., Ltd., 1912. \$2.50.

As stated in the secondary title, this book which is a companion volume to "Dynamos and Motors," is intended as a textbook and as an elementary treatise on electrical engineering. As such, little attention, it is stated, has been given to the principles of design, the subject-matter being devoted to the purely physical problems of operating engineering. The Contents are: Installation and Operation Costs; Electric Distribution and Wiring; Alternating-Current Lines; Photometry; Electric Lamps, Lamp Shades and Reflectors; Interior Illumination; Street Illumination; Electrolysis and Batteries; Telegraph and Telephone; Appendix A, Dielectric Stresses; Appendix B, Problems; Index.

OBED HUSSEY.

Who, of All Inventors, Made Bread Cheap. Edited by Follett L. Greeno. Cloth, $7\frac{1}{2} \times 5\frac{1}{2}$ in., illus., 228 pp. Rochester, N. Y., Follett L. Greeno, 1912.

On the title-page of this book, it is stated that it is "a true record of his [Mr. Hussey's] life and struggles to introduce his greatest invention, the reaper, and its success, as gathered from pamphlets published heretofore by some of his friends and associates, and reprinted in this volume together with some additional facts and testimonials from other sources."

SWEET'S CATALOGUE OF BUILDING CONSTRUCTION.

Architects' and Builders' Edition for 1913, Indexed by Firms Represented, by Products, and by Location; Together with a Checking List for Use in the Making of Specifications and Estimates, by William Brokaw Bamford, M. Am. Soc. C. E. Devised, Compiled, Edited and Published Annually by The Architectural Record Co. Cloth, $13\frac{1}{2} \times 10$ in., illus., 71 + 1901 pp. New York and Chicago, Architectural Record Co., 1913.

The General Index to this volume is divided into three parts: Part I, Index to Firms Catalogued, which contains an alphabetical list of all firms included in the Catalogue; Part II, Products Index, which contains a list of all the products included in the Catalogue, arranged alphabetically, with cross-references; and Part III, Geographical Index, which contains a list of all the firms catalogued, arranged alphabetically by cities, including each firm's main and branch offices and agencies.

Gifts have also been received from the following:

- | | |
|--|--|
| Am. Assoc. of Mfrs. of Sand Lime Products. 4 pam. | Canada-Dept. of Rys. and Canals. 6 vol., 3 pam., 2 maps. |
| Am. Bridge Co. of New York. 6 pam. | Chicago, Indiana & Southern R. R. Co. 1 pam. |
| Am. Gas. Inst. 1 bound vol. | Colorado-State R. R. Comm. 2 pam. |
| Am. Inst. of Elec. Engrs. 1 bound vol. | Commonwealth Club of California. 2 pam. |
| Arizona-Board of Equalization. 2 pam. | Cumberland Valley R. R. Co. 1 pam. |
| Assoc. of Am. Portland Cement Mfrs. 1 pam. | Danvers, Mass.-Water Commrs. 1 pam. |
| Attleborough, Mass.-Town Clerk. 1 pam. | Durham, H. W. 1 pam. |
| Australia-Bureau of Census and Statistics. 1 pam. | Florida-Comptroller. 1 vol., 1 pam. |
| Baltimore, Md.-City Librarian. 1 bound vol. | Gospel Trumpet Co. 3 bound vol., 5 pam. |
| Baltimore County, Md.-Roads Engr. 1 pam. | Harrisburg, Pa.-Water and Lighting Dept. 1 pam. |
| Binghamton, N. Y.-Water Commrs. 1 pam. | Hartford, Conn.-City Clerk. 1 bound vol. |
| Boldi, Marc Aurelio. 1 pam. | Harvard Univ. 1 vol. |
| Brazil-Ministerio da Viacao e Obras Publicas. 2 vol. | Hawaii-Territorial Board of Health. 1 pam. |
| Burlington, Vt.-City Clerk. 1 bound vol. | Hazen, Allen. 1 pam. |
| California-Highway Comm. 1 pam. | Hilgard, K. E. 2 bound vol. |
| California-State Conservation Comm. and Water Comm. 1 vol. | Holyoke, Mass.-Board of Water Commrs. 1 pam. |
| California-State Forester. 1 pam. | Idaho-Board of Land Commrs. 2 pam. |
| California-State Min. Bureau. 1 pam. | Idaho-State Engr. 1 bound vol. |
| California-State Water Comm. 2 vol. | Illinois-Canal Commrs. 1 bound vol. |
| California Miners' Assoc. 1 vol. | Illinois-Rivers and Lakes Comm. 1 bound vol. |
| California, Univ. of. 1 pam. | Illinois-State Geol. Survey. 1 bound vol., 1 map. |
| Cambridge, Mass.-City Clerk. 1 vol. | Indiana-R. R. Comm. 1 bound vol. |
| Cambridge Univ. & Town Water-Works Co. 1 pam. | Indiana Univ. 1 vol. |
| Canada-Comm. of Conservation. 1 pam. | Inter. Waterways Comm. 1 pam. |
| Canada-Dept. of Colonization, Mines, and Fisheries. 1 pam. | Jackson, D. D. 1 bound vol. |
| Canada-Dept. of Marine and Fisheries. 2 pam. | Jacobs-Shupert U. S. Firebox Co. 1 pam. |
| Canada-Dept. of Mines. 1 vol., 2 pam. | Lake Erie & Western R. R. Co. 1 pam. |
| | Lake Shore & Michigan Southern Ry. Co. 1 pam. |
| | Lehigh Coal & Navigation Co. 1 pam. |

- Long Island R. R. Co. 1 pam.
 Los Angeles, Cal.-City Auditor. 1 pam.
 Louisiana-Board of State Engrs. 3 pam.
 Louisiana State Univ. 1 pam.
 Maine-Forest Commr. 1 bound vol.
 Maine-R. R. Commrs. 1 bound vol.
 Maine Soc. of Civ. Engrs. 1 pam.
 Maryland-Public Service Comm. 1 bound vol.
 Massachusetts-Directors of the Port of Boston. 1 pam.
 Mexico-Secretaria de Comunicaciones y Obras Publicas. 3 vol.
 Michigan-State Highway Commr. 1 bound vol.
 Minnesota-State Forester. 1 bound vol., 1 pam.
 Mississippi River Power Co. 1 pam.
 New Bedford, Mass.-Water Board. 1 pam.
 New Hampshire-Public Service Comm. 1 bound vol.
 New York City-Art Comm. 1 bound vol.
 New York City-Board of Water Supply. 1 bound vol.
 New York City-Bureau of Bldgs. 1 pam.
 New York City-Dept. of Docks and Ferries. 4 pam.
 New York State Conservation Comm. 1 bound vol.
 New York State-Watkins Glen Reservation Comm. 1 pam.
 New York Central & Hudson River R. R. Co. 1 pam.
 North Carolina-State Board of Health. 1 vol.
 Ohio State Univ. 3 pam.
 Oklahoma-Geol. Survey. 6 pam.
 Omaha, Nebr.-City Comptroller. 1 pam.
 Oregon-State Board of Health. 1 pam.
 Pennsylvania-Water Supply Comm. 1 pam.
 Perth, Australia-City Clerk. 5 pam.
 Philadelphia, Pa.-Free Library. 2 bound vol.
 Pittsburgh, Pa.-Dept. of Public Works. 1 vol.
 Pittsburgh & Lake Erie R. R. Co. 1 pam.
 Polytechnic Inst. of Brooklyn. 1 pam.
 Rhode Island-Chf. Factory Insp. 1 pam.
 St. Louis, Mo.-Public Service Comm. 2 bound vol.
 Salem, Mass.-Water Dept. 1 pam.
 Smithsonian Institution. 4 pam.
 Soc. of Constructors of Federal Bldgs. 11 pam.
 Southend Waterworks Co. 1 pam.
 Southern Pacific Co. 1 pam.
 Stearns, F. P. 1 pam.
 Switzerland-Landeshydrographie. 1 pam.
 Toledo & Ohio Central Ry. Co. 1 pam.
 Traveling Engrs. Assoc. 5 bound vol.
 Tyrrell, Henry Gratton. 1 pam.
 U. S.-Bureau of Mines. 3 pam.
 U. S.-Bureau of Standards. 2 pam.
 U. S.-Bureau of Statistics. 1 pam.
 U. S.-Census Bureau. 2 bound vol.
 U. S. Chf. of Engrs. 6 bound vol., 1 vol., 3 pam., 16 specif.
 U. S. Chf. of Ordnance. 1 bound vol., 1 pam.
 U. S.-Coast and Geodetic Survey. 2 pam.
 U. S.-Commr. of Corporations. 1 pam.
 U. S.-Forest Service. 1 pam.
 U. S.-Geol. Survey. 2 bound vol.
 U. S.-National Museum. 1 bound vol.
 U. S.-Naval Observatory. 1 bound vol., 1 pam.
 U. S.-Navy Dept. 1 pam.
 U. S.-Office of Public Roads. 1 pam.
 U. S.-Reclamation Service. 21 pam.
 U. S.-Surgeon-General. 1 bound vol., 1 vol.
 U. S. Steel Corporation. 1 pam.
 Vermont-State Board of Health. 1 bound vol.
 Virginia-Bureau of Labor and Industrial Statistics. 1 bound vol.
 Virginia-Commr. of Health. 1 pam.
 Waltham, Mass.-Water Dept. 1 pam.
 Western Canada Irrig. Assoc. 1 pam.
 Wilkerson, T. J. 1 vol.
 Wilmington, Del.-Board of Park Commrs. 1 pam.
 Woonsocket, R. I.-Water Commrs. 1 pam.
 Worcester Polytechnic Inst. 1 vol.
 Yale Univ. 1 vol.

BY PURCHASE

Annales des Mines ou Recueil de Memoires sur l'Exploitation des Mines et sur les Sciences et les Arts qui s'y Rattachent. Publies sous l'Autorisation du Ministre des Travaux Publics des Postes et des Telegraphes. H. Dunod et E. Pinat, Paris, 1907.

Ölmotoren in Viertakt- und Zweitaktbauart: Entwurf, Berechnung und Bau der Leichtölmotoren, Glühkopfmotoren, Hochdruckmotoren (Diesel u. a.) ferner Motorlokomobilen, Schiffs- und Automobil-motoren, Motorlokomotiven, Triebwagen, Luftschiffsmotoren. Von H. Haeder. 2 Vol. Otto Haeder, Wiesbaden, 1912.

Coal: Its Composition, Analysis, Utilization and Valuation. By E. E. Somermeir. McGraw-Hill Book Co., New York and London, 1912.

The American Year Book: A Record of Events and Progress, 1912. Edited by Francis G. Wickware Under Direction of a Supervisory Board Representing National Learned Societies. D. Appleton and Co., New York and London, 1913.

The New City Government. A Discussion of Municipal Administration Based on a Survey of Ten Commission Governed Cities. By Henry Bruère and William Sheperdson, Coöperating in the Collection and Tabulation of Material Respecting Commission Government. D. Appleton and Co., New York and London, 1912.

German Varnish-Making. By Max Bottler. Authorized Translation with Notes on American Varnish and Paint Manufacture, by Alvah Horton Sabin. John Wiley & Sons, New York and London, 1912.

The Graphic Method of Influence Lines for Bridge and Roof Computations. By William H. Burr and Myron S. Falk. Third Edition. John Wiley & Sons, New York and London, 1912.

The Design and Construction of Steam Turbines, A Manual for the Engineer. By Harold Medway Martin. Longmans, Green and Co., New York and London, 1913.

Methods of Measuring Electrical Resistance. By Edwin F. Northrup. McGraw-Hill Book Co., New York and London, 1912.

Motor Car Construction: A Practical Manual for Engineers, Students, and Motor Car Owners, with Notes on Wind Resistance and Body Design. By Robert W. Brewer. D. Van Nostrand Company, New York; Crosby Lockwood and Son, London, 1912.

Concentrating Ores by Flotation, Being a Description and History of a Recent Metallurgical Development. Together with a Summary of Patents and Litigation. By Theodore J. Hoover. Mining and Scientific Press, San Francisco; The Mining Magazine, London, E. C., 1912.

Der Eisenbau: Ein Hilfsbuch für den Brückenbauer und Eisenkonstrukteur. Von Luigi Vianello. In zweiter Auflage umgearbeitet und erweitert von Carl Stumpf. R. Oldenbourg, München und Berlin, 1912.

Die Eisenbetonliteratur bis Ende 1910: 1, Inhalts-Verzeichnis der Zeitschrift Beton u. Eisen 1901 bis 1909; 2, Schlagwortverzeichnis zum Handbuch für Eisenbetonbau; 3, Zeitschriftenschau der gesamten Eisenbetonliteratur bis Ende 1910. By Richard Hoffmann. Wilhelm Ernst & Sohn, Berlin, 1911.

Forscherarbeiten auf dem Gebiete des Eisenbetons: Beitrag zur Berechnung der kreuzweise bewehrten Eisenbetonplatten und deren Aufnahmeträger. Von Arturo Danusso. Heft 21. Wilhelm Ernst & Sohn, Berlin, 1913.

Handbuch der Ingenieurwissenschaften: Fünfter Teil. Der Eisenbahnbau; Betriebseinrichtungen. Von S. Scheibner, F. Loewe und H. Zimmermann. Sechster Band. 3 Vol. Wilhelm Engelmann, Leipzig, 1913.

SUMMARY OF ACCESSIONS

(From March 5th to April 1st, 1913.)

Donations (including 12 duplicates).....270

By purchase..... 18

Total..... 288

MEMBERSHIP

ADDITIONS

(From March 7th to April 3d, 1913)

MEMBERS		Date of Membership.
AMES, WILLIAM GOODSON. Chf. Engr., Smith & Davis, 514 Lonja del Comercio, Havana, Cuba.....		Mar. 4, 1913
ANDRESEN, HERMAN PETER. Dist. Sales Mgr., The Good Roads Machinery Co., 1515 City Hall Sq. Bldg., Chicago, Ill.....		Mar. 4, 1913
BARR, JOHN TONER. Contr. Engr., 237 Fourth Ave., Pitts- burgh, Pa.....		Mar. 4, 1913
BROMFIELD, DAVENPORT. Engr., San Carlos Park Syndi- cate; City Engr., San Mateo, Cal.....		Oct. 1, 1912
COUGHLIN, WILLIAM GODLEY. Supt., Renovo Div., P. R. R., Renovo, Pa.....		Mar. 4, 1913
CRANE, JOSEPH SPENCER. Cons. Engr., 207 Market St., Newark, N. J.....	Jun.	Dec. 5, 1905
	Assoc. M.	Nov. 4, 1908
	M.	Jan. 7, 1913
DUNNELLS, CLIFFORD GEORGE. Associate Prof., Head of Dept. of Bldg. Constr., School of Applied Industries, Carnegie Inst. of Technology, Pittsburgh, Pa.....	Jun.	Feb. 4, 1902
	Assoc. M.	Jan. 2, 1907
	M.	Mar. 4, 1913
FELTON, WILLIAM REID. Dist. Engr., C., M. & St. P. Ry., Lonetree, Mont.....		Mar. 4, 1913
GARDNER, RANDALL DUNBAR. Asst. Engr., Bridge and Ferry Div., Dept. of Public Works, Room 60, City Hall, Boston, Mass.....	Assoc. M.	May 1, 1907
	M.	Mar. 4, 1913
GIESECKE, FRIEDERICH ERNST. Univ. of Texas, University Station, Austin, Tex.....		Mar. 4, 1913
GRANT, KENNETH CROTHERS. With Pittsburgh Flood and City Planning Commissions, 1808 Arrott Bldg., Pittsburgh, Pa.....	Assoc. M.	Feb. 2, 1909
	M.	Mar. 4, 1913
HOWARD, ERNEST EMMANUEL. Associate Engr., Waddell & Harrington, 1012 Baltimore Ave., Kansas City, Mo.....	Jun.	Dec. 3, 1901
	Assoc. M.	Sept. 6, 1905
	M.	Mar. 4, 1913
JACKSON, EDWARD SHERMAN. Supt. and Chf. Engr., Milner & North Side R. R., and Supt., Idaho Southern R. R., Gooding, Idaho.....		Mar. 4, 1913
MORGAN, ARTHUR ERNEST. Pres., Morgan Eng. Co., 608 Goodwyn Inst. Bldg., Memphis, Tenn.....	Assoc. M.	May 3, 1910
	M.	Mar. 4, 1913
PATTISON, HUGH. Elec. Engr., The Chicago Assoc. of Com- merce, Committee of Investigation on Smoke Abate- ment and Electrification of Ry. Terminals, 1333 Peoples Gas Bldg., Chicago, Ill.....		Mar. 4, 1913

MEMBERS (Continued)		Date of Membership.	
PILL, JOHN RICHARDS. Pres., Birmingham Fuel Co.; Gen. Mgr., Corona Coal & Iron Co., Corona, Ala.....	Assoc. M.	Feb.	7, 1906
	M.	Mar.	4, 1913
POLHAMUS, ROYAL ALBERT. Care, Dominion Bridge Co., Montreal, Que., Canada.....		Jan.	7, 1913
RHODIN, CARL JONAS. Care, J. G. White & Co., Inc., 509 Alaska Commercial Bldg., San Francisco, Cal.....		Dec.	3, 1912
RIPLEY, BLAIR. Engr., Grade Separation, C. P. Ry., 262 Avenue Rd., Toronto, Ont., Canada.....	Assoc. M.	April	1, 1908
	M.	Mar.	4, 1913
ROTHROCK, WILLIAM POWELL. Engr. of Erection, Fort Pitt Bridge Works of Pittsburg, Pa., 510 House Bldg., Pittsburgh, Pa.....		Mar.	4, 1913
ROURKE, JOSEPH ALOYSIUS. Mech. Engr., High Pressure Fire Service, Public Works Dept., 743 Tremont St., Boston, Mass.....		Mar.	4, 1913
SCHADE, CHARLES GEORGE. Prin. Asst. Engr., Fort Pitt Bridge Works of Pittsburg, Pa., 215 Smithfield St., Canonsburg, Pa.....		Mar.	4, 1913
ASSOCIATE MEMBERS			
ADELHELM, WILLIAM THOMAS. Asst. Engr., Eng. Dept., Belmont Iron Works, 2526 South Colorado St., Philadelphia, Pa.....		Mar.	4, 1913
BEGG, ROBERT BURNS HALDANE. Prof. of San. and Hydr. Eng., Univ. of Kansas, Lawrence, Kans.....		Mar.	4, 1913
COLE, ERNEST DELEVAN. 511 East Chestnut Ave., Santa Ana, Cal.....	Jun.	Oct.	31, 1911
	Assoc. M.	Feb.	4, 1913
COOK, RICHARD BAILEY. Engr. and Asst. to Pres., The General Crushed Stone Co., also Amies Rd. Co., Easton, Pa.....		Mar.	4, 1913
FARRINGTON, HAROLD PHILLIPS. Engr., Vielé, Blackwell & Buck, 49 Wall St., New York City.....	Jun.	April	5, 1910
	Assoc. M.	Mar.	4, 1913
FROST, WILLIS GEORGE. Res. Engr., California Highway Comm., P. O. Box 262, Healdsburg, Cal.....	Jun.	Dec.	5, 1911
	Assoc. M.	Mar.	4, 1913
FULCHER, RAY EDGAR. Care, Sanderson & Porter, Sonora, Cal.....		Mar.	4, 1913
GOLDSMITH, WILLIAM. With Cons. Engr.'s Office, Borough of Manhattan, 203 West 122d St., New York City...		Mar.	4, 1913
GRAY, HARRY MATT. Res. Engr., Hazen & Whipple, 21 Balding Ave., Poughkeepsie, N. Y.....		Mar.	4, 1913
GREELEY, SAMUEL ARNOLD. Asst. Engr., Sewage Disposal Div., San. Dist. of Chicago, Winnetka, Ill.....	Jun.	Feb.	5, 1907
	Assoc. M.	Mar.	4, 1913

ASSOCIATE MEMBERS (Continued)

Date of
Membership.

HARMON, IVAN GUY.	Care, Mercantile Trust Co., St. Louis, Mo.		Dec. 3, 1912
HEYMAN, WILLIAM.	325 Montgomery St., Jersey City, N. J.	Jun.	June 30, 1911
		Assoc. M.	Mar. 4, 1913
HOWARD, JOHN WARDWELL.	Instr. in Civ. Eng., Mass. Inst. of Tech., Boston, Mass.		Mar. 4, 1913
KESNER, HENRY JAMES.	Asst. Prof. of Civ. Eng., Univ. of California, Civ. Eng. Bldg., Berkeley, Cal.	Jun.	Dec. 6, 1910
		Assoc. M.	Mar. 4, 1913
KINGSLEY, CHARLES BROWN.	82 King St., East, Toronto, Ont., Canada		Mar. 4, 1913
LOGAN, HAL HELM.	504 Empire Bldg., Denver, Colo.		Mar. 4, 1913
MACOMBER, STANLEY.	City Engr., City Hall, Centralia, Wash.		Mar. 4, 1913
MCCRORY, THOMAS GEORGE.	Engr. in-Chg., International Contract Co., 501 Central Bldg., Seattle, Wash.	Jun.	Dec. 1, 1908
		Assoc. M.	Mar. 4, 1913
MAHON, JOHN MONTGOMERY, JR.	Asst. Engr., Pennsylvania Dept. of Health, 219 Walnut St., Harrisburg, Pa.		Mar. 4, 1913
MIETH, RICHARD ELAM.	Mgr., Portland Bridge Co., 1125 Yeon Bldg., Portland, Ore.	Jun.	May 1, 1906
		Assoc. M.	Mar. 4, 1913
OKES, DAY IRA.	Chf. Engr., The Kettle River Co., 2700 Pillsbury Ave., Minneapolis, Minn.	Jun.	Mar. 1, 1910
		Assoc. M.	Mar. 4, 1913
PAINE, PAUL McCLARY.	Engr. and Asst. Supt., Honolulu Consolidated Oil Co., Fellows, Cal.		Mar. 4, 1913
PANI, ARTURO.	Chf. of Dept. of Public Works, Govt. Ministry of Communications and Public Works, 5 ^a del Fresno No. 184, City of Mexico, Mexico		Mar. 4, 1913
SANGER, WALTER MAX.	Engr., George M. Jones Coal Co., 635 Lincoln Ave., Toledo, Ohio	Jun.	May 5, 1908
		Assoc. M.	Mar. 4, 1913
SEIBERT, PERCY ALLEN.	Mgr. and Legal Representative, Andes Tin Co., Casilla No. 378, La Paz, Bolivia		Jan. 7, 1913
SMITH, CLARENCE URLING.	Res. Engr., C. M. & St. P. Ry., P. O. Box 23, Chanhassen, Minn.	Jun.	Sept. 5, 1911
		Assoc. M.	Feb. 4, 1913
SMITH, HAROLD GARFIELD.	Room 605, Deseret News Bldg., Salt Lake City, Utah		Feb. 4, 1913
STEVENSON, JAMES CUMMIN.	Supt. of Constr., H. L. Stevens & Co., Main Ave. and Houston St., San Antonio, Tex.		Mar. 4, 1913
WHITHAM, PAUL PAGE.	Chf. Engr., Port of Seattle, 843 Central Bldg., Seattle, Wash.		Oct. 1, 1912
YOUNG, OLIVER EARLE.	Care, Amalgamated Phosphate Co., Chicora, Fla.	Jun.	June 6, 1911
		Assoc. M.	Mar. 4, 1913

JUNIORS		Date of Membership.
BATES, CLARENCE MYERS. Res. Engr., Waddell & Harrington, Cor. 11th St. and St. Paul Ave., Tacoma, Wash.		Feb. 14, 1913
BROWN, EARL DANIEL. 2164 Forty-second Ave., Oakland, Cal.		Oct. 1, 1912
BRURY, WILLIAM FISHER. Engr-in-Chg., Veazie Dam, for Bangor Power Co., Box 261, Orono, Me.		Mar. 14, 1913
EURICH, RICHARD HENDERSON. 144 Union St., Montclair, N. J.		Mar. 4, 1913
GREENE, ROBERT NESBITT. Engr. for S. H. McKenzie, Box 375, Southington, Conn.		Mar. 4, 1913
GUILLEMETTE, JOSEPH DYDEME. 434 Rebecca Ave., Wilkesburg, Pa.		Oct. 29, 1912
HOWARD, CECIL WARD. Care, Wells Bros. Constr. Co., Cincinnati, Ohio.		Jan. 7, 1913
PARTRIDGE, JOHN FREDERICK. Escalon, Cal.		Feb. 4, 1913
SCHROEDER, SEATON, JR. Care, Barclay Parsons & Klapp, Altmar, N. Y.		Mar. 14, 1913
SHIELDS, JAMES RALPH. Asst. in Testing Laboratory, Univ. of California, 2119 McKinley Ave., Berkeley, Cal.		Oct. 1, 1912
STAVA, WILLIAM. Box 480, Escalon, Cal.		Feb. 4, 1913
STEINHAUSER, HARRY HERMAN. Asst. to Engr-in-Chg. of Hydraulics, Rochester Ry. & Light Co., 34 Clinton Ave., N., Rochester, N. Y.		Feb. 14, 1913
TATE, ROBERT L'HOMMEDIEU. Care, Hydro-Elec. Co. of W. Va., Bruceton Mills, W. Va.		Mar. 4, 1913

CHANGES OF ADDRESS

MEMBERS

ANDROS, FREDERIC WILLIAM. 718-Calle Agustinas, Santiago, Chili.
ARTHUR, HOWARD ELMER. Stearns, N. C.
ATWOOD, THOMAS CLARK. Div. Engr., Dept. of Water Supply, Gas, and Electricity, 13 Park Row, New York City (Res., 8 Amackassin Terrace, Yonkers, N. Y.).
AUCHINCLOSS, WILLIAM S. Atlantic Highlands, N. J.
BLAND, JOHN CARLISLE. Engr. of Bridges, Penn. Lines West of Pitts., Room 1115, Pennsylvania Station, Pittsburgh, Pa.
BONSTOW, THOMAS LACEY. With S. Pearson & Son, Sucesores, S. A., Apartado 68, Puerto Mexico, Ver., Mexico.
BRYANT, BYRON HARKNESS. Care, W. B. Bryant, 6708 Lakewood Ave., Chicago, Ill.
BUDGE, ENRIQUE. 104 Avenue Kléber, Paris, France.
BURROWES, HARRY GILBERT. Cons. Engr., Pittsville, Pa.
BYERS, MAXWELL CUNNINGHAM. Asst. to the Pres., G. N. Ry., 655 Goodrich Ave., St. Paul, Minn.

MEMBERS (Continued)

- COLE, WILLIAM WEEDEN. Mgr. of Utilities Dept., Dodge & Day, 611 Chestnut St., Philadelphia, Pa.
- ERNST, OSWALD HERBERT. Brig.-Gen., U. S. A. (Retired); Chairman, Am. Section, International Waterways Comm., 1321 Connecticut Ave., Washington, D. C.
- ESSELSTYN, HORACE HOVEY. Constr. Engr., The Edison Illuminating Co., 67 Kenilworth Ave., Detroit, Mich.
- FESSENDEN, RALPH SETH. 1002 North 20th St., Boise, Idaho.
- FOX, JOHN ANGELL. Secy.-Mgr., Mississippi River Levee Assoc., 416 Scimitar Bldg., Memphis, Tenn.
- HARDING, CHESTER. Maj., Corps of Engrs., U. S. A., District Bldg., Washington, D. C.
- HAYT, ROBERT OLCOTT. Corning, N. Y.
- HERBERT, HARRY MONMOUTH. Cons. Engr., Bound Brook, N. J.
- HOGUE, CHESTER JAMES. Elton Court, Portland, Ore.
- HOWARD, CHARLES POPE. Cons. Engr. (Howard & Roberts), 1662 Transportation Bldg., Chicago, Ill.
- JUDSON, WILLIAM VOORHEES. Col., Corps of Engrs., U. S. A., Care, Col. Goethals, Culebra, Canal Zone, Panama.
- LAUB, HERMANN. Cons. Engr., 611 Keystone Bldg., Pittsburgh, Pa.
- MACLAY, EDGAR GLEIM. (Central Contr. Co.), 421 Beatty Bldg., Houston, Tex.
- MCGONIGLE, CHARLES JOSEPH. Cons. Structural Engr., 815 Chamber of Commerce Bldg., Portland, Ore.
- MATHESON, ERNEST GEORGE. Coquitlam, B. C., Canada.
- MOLITOR, DAVID ALBERT. Care, Toronto Harbor Commrs., 76 Adelaide St., West, Toronto, Ont., Canada.
- MOODY, BURDETT. Chf. Engr., Water Dept., 72 North Fair Oaks Ave., Pasadena, Cal.
- NICHOLS, EDWIN JAY. Asst. Engr., St. Louis; Southwestern Ry., 424 West Ferguson St., Tyler, Tex.
- NICHOLS, WALTER SWAIN. 717 Walnut St., Philadelphia, Pa.
- PHILLIPS, ARTHUR LOUIS. Asst. Div. Engr., Tela R. R., Tela, Honduras.
- POLLEYS, WILLIAM VAUGHAN. Care, The Hibbard Co., Ltd., Fredericton, N. B., Canada.
- REED, WENDELL MONROE. Chf. Engr., U. S. Indian Irrig. Service, Washington, D. C.
- RICHARDSON, CLIFFORD. Cons. Engr., Room 1615, Woolworth Bldg., New York City.
- ROBERTS, SHELBY SAUFLEY. Cons. Engr., Care, Howard & Roberts, Room 1662, Transportation Bldg., Chicago, Ill.
- ROSENCRANS, WILLIAM HENRY. Cons. Engr., 30 North La Salle St., Chicago, Ill.
- RUGGLES, WILLIAM BURROUGHS. 4518 Sixteenth Ave., N. E., Seattle, Wash.
- SHAW, ENOS LARKIN. 1642 Monadnock Blk., Chicago, Ill.

MEMBERS (Continued)

- STEIN, CHARLES HENRY. Engr., M. of W., C. R. R. of N. J., 69 Danforth Ave., Jersey City, N. J.
- STICKLE, HORTON WHITEFIELD. Maj., Corps of Engrs., U. S. A., Wilmington, N. C.
- STUBBS, LINTON WADDELL. 657 Herndon Ave., Shreveport, La.
- SWINDLEHURST, HAROLD LIONEL. Shire Engr., Goulburn City, New South Wales, Australia.
- TAYLOR, SAMUEL ALFRED. Cons. Civ. and Min. Engr., 5th Floor, 2d National Bank Bldg., Pittsburgh, Pa.
- WALSH, GEORGE SCHERZER. Vice-Pres. and Mgr., Sambenigno Mines & Estates Co., Anori, Colombia.
- WATSON, WILBUR JAY. 1150 Leader Bldg., Cleveland, Ohio.
- ZIESING, AUGUST. Pres., Am. Bridge Co., 72 West Adams St., Chicago, Ill.

ASSOCIATE MEMBERS

- ALDERSON, WILLIAM HOWARD. Care, F. H. Taylor, 937 Leland Ave., Chicago, Ill.
- ARCHER, AUGUSTUS ROWLEY. St. John's Rd., Watford, Herts, England.
- BALDRIDGE, JAMES RAMSEY. Care, Irwin & Leighton, 126 West 12th St., Philadelphia, Pa.
- BEESON, ALEXANDER CONN. 150 East Maiden St., Washington, Pa.
- BISHOP, LYMAN EDGAR. Care, The Goldsborough Co., 514 First National Bank Bldg., Denver, Colo.
- BLACK, EDWARD FRYLING. Engr., Sanderson & Porter, 52 William St., New York City.
- BRAINARD, NORMAND DAGGETT. 1031 West Woodruff Ave., Toledo, Ohio.
- BURKETT, JOSEPH MILLER. Carey Act Engr., State of Idaho, Oakley, Idaho.
- BURTON, WAYNE JOSEPH. Asst. Engr., Office of Engr., M. of W., Mo. Pac. Ry., 627 Midland Bldg., Kansas City, Mo.
- BUTLER, MILLARD ANGLE. Locating Engr., Montana Eastern Ry.; Asst. Engr., G. N. Ry. Circle, Mont.
- CLOSSON, EDGAR STONE. Town Engr. (Res., 5 Belvidere Pl.), Montclair, N. J.
- CLOUGH, ALBERT HASKELL. Supt. of Constr. for T. K. Beard Co., South San Joaquin Irrig. Canal, 1291 Pine St., San Francisco, Cal.
- COLLINS, WALES SMITH. 2247 West 34th Ave., Denver, Colo.
- COOK, PAUL DARWIN. 513 United Bank Bldg., Sioux City, Iowa.
- COOPER, KENNETH FARRA. Gen. Mgr., Am. Cyanamid Co., 528 Ellicott Sq., Buffalo, N. Y.
- CORLETT, BERTRAM EDWIN. 224 South Ry. St., Medicine Hat, Alberta, Canada.
- DANN, ALEXANDER WILLIAM. Box 404, Vicksburg, Miss.
- DATER, PHILIP HERRICK. Dist. Engr., Forest Service, Beck Bldg., Portland, Ore.
- DEMOREST, GEORGE MYRON. College Hill, Beaver Falls, Pa.

ASSOCIATE MEMBERS (Continued)

- DESSERTY, FLOYD GOSSETT. Civ. and Hydr. Engr., Room 511, Central Bldg., Los Angeles, Cal.
- DOW, WILLIAM GREAR. Care, Hardaway Contr. Co., Whitney, N. C.
- EASTERBROOKS, PRESTON BURT. Room 611, Confederation Life Bldg., Winnipeg, Man., Canada.
- ELLIOTT, MALCOLM. Junior Engr., U. S. Engr. Office, Box 72, Louisville, Ky.
- ELLIS, GUERNSEY WILLIAM. Special Agt., Penn Mutual Life Insurance Co., 905 Ellicott Sq., Buffalo, N. Y.
- FARNHAM, CHARLES HENRY. Engr. in Chg., Track Constr., Pernambuco Tramways, Care, J. G. White & Co., Ltd., Pernambuco, Brazil.
- GOODMAN, HARRY MINOTT. 1410 Milvia St., Berkeley, Cal.
- GUSTAFSON, GUSTAF EDWARD. With E. C. & R. M. Shankland 1106 The Rookery (Res., 1229 Addison St.), Chicago, Ill.
- HANCOCK, HENRY SYDNEY, JR. Cons. Engr., 16 Hastings St., East, Vancouver, B. C., Canada.
- HARRINGTON, ALLAN COLLINS. Gen. Mgr., Marquette County Gas & Elec. Co., Ishpeming, Mich.
- HARTUNG, PAUL AUGUST. 513 Shukert Bldg., Kansas City, Mo.
- HEALEY, CHARLES FRANK. Dist. Engr., C. M. & P. S. Ry., 1516 South 9th St., Tacoma, Wash.
- HEER, WILLIAM, JR. Pennington, Ala.
- HILTON, JOSEPH CHURCHILL. Secy., Mason, Hilton & Co., Contrs., 17 Battery Pl., New York City.
- HOOD, HUGH KENDALL. Res. Engr., Hardaway Contr. Co., Whitney, N. C.
- HOOD, JOSEPH NELSON. Care, Davis & Davis, 14 St. Peter St., Quebec, Que., Canada.
- HOWELL, CLEVES HARRISON. 1002 Gas Bldg., Denver, Colo.
- HUNTING, EUGENE NATHAN. Archt. and Engr. (The Hunting Davis Co.), Century Bldg., Pittsburgh, Pa.
- JOHNSON, RANKIN. Huntington, N. Y.
- LAFLE, WILLIAM ARTHUR. Cons. Engr., 411 Chamber of Commerce Bldg., Rochester, N. Y.
- LANGLOIS, AMEDEE. 152 Osgoode St., Ottawa, Ont., Canada.
- LAWSON, LAWRENCE MILTON. Asst. Engr., U. S. Reclamation Service, El Paso, Tex.
- MEEM, JAMES LAWRENCE. Pres., Meem & Kinnier, Inc., Jonesboro, Tenn.
- MOFFATT, BURNAM A. Pres., The Moffatt Co., 225 Fifth St., Room 807, Des Moines, Iowa.
- MOODY, JOSEPH ELBERT. With Hurley-Mason Co., Engrs. and Contrs., Sherwood Bldg., Spokane, Wash.
- MURRAY, CLARE DELOSS. Care, Utah Power & Light Co., Grace, Idaho.
- NASH, FRANK DANA. Locating Engr., Pan-American Ry., Durazno, Uruguay.
- OAKLEY, GEORGE ISRAEL. Little Falls, N. Y.

ASSOCIATE MEMBERS (*Continued*)

- OSBOURN, HENRY VAN BUREN. Insp., Bureau of Highways (Res., 805 East Washington Lane), Philadelphia, Pa.
- PENDLETON, DAVID ELLIOTT. Room 67 Dearborn Station, Chicago, Ill.
- ROACH, JAMES HOWARD. Asst. Engr. of Constr., The L. S. & M. S. Ry., 11512 Ashbury Ave., Cleveland, Ohio.
- RUCKES, JOSEPH JOHN, JR. Engr., Barrett Mfg. Co., 954 Anderson Ave., New York City.
- RYAN, WALTER J. Waterman, Wash.
- SCHMID, FRANCIS RAUCH. Asst. Engr., N. Y. C. & H. R. R. R., 540 Lexington Ave., Room 622, New York City.
- SHAW, GEORGE HERBERT. San. Engr., Bureau of Animal Industry, Dept. of Agri., Washington, D. C.
- SINNICKSON, GEORGE ROSENGARTEN. Care, W. J. & S. R. R., Camden, N. J.
- SKINNER, FREDERICK GARDINER. 41 Willis Ave., West, Detroit, Mich.
- STANAGE, JOHN LYNCH. Supt. of Constr., Roach & Manigan, Room 411 Times-Herald Bldg., Waco, Tex.
- STEFFENS, WILLIAM FREDERICK. Asst. Chf. Engr., C. & O. R. R., Richmond, Va.
- STEHLE, FELIX CHARLES. Towanda, Pa.
- STRICKLER, FREDERICK WINEMAN. Care, Erie R. R., Cambridge Springs, Pa.
- TARR, CHARLES WINTHROP. 12 East Haverhill St., Lawrence, Mass.
- TEFFT, WILLIAM WOLCOTT. Civ. and Hydr. Engr., 708 Wildwood Ave., Jackson, Mich.
- THOMAS, WILLIAM EDWARD. 68 East 86th St., New York City.
- TOMLINSON, CARL PERKINS. Asst. Supt. of Constr., Stone & Webster Eng. Corporation, 38 Morris St., Danbury, Conn.
- VOORHES, KIMBROUGH ENOCH. 41 North Arlington Ave., East Orange, N. J.
- WHITE, ARTHUR BURR. Civ. and Hydr. Engr. (Bixby & White), 105 Henne Bldg., Los Angeles, Cal.

ASSOCIATES

- MARSH, ALBERT LEREAUX. 282 Montclair Ave., Newark, N. J.
- OLDS, WILLIAM CLARENCE. 1817 F St., N. W., Washington, D. C.
- PARSHALL, RALPH LEROY. Care, U. S. Dept. of Agri., Colorado Experiment Stations, Fort Collins, Colo.

JUNIORS

- ARMSTRONG, GEORGE SIMPSON, JR. Care, Suffern & Son, 21 Bold St., Hamilton, Ont., Canada.
- BEALL, PENDLETON. P. O. Box 72, Poughkeepsie, N. Y.
- BOLTON, FRANK LEONARD. Designing and Const. Engr. (Bolton, Ruetenik & May), Bend, Ore.
- BOWMAN, RALPH McLANE. Reinforced Concrete Designer, Corrugated Bar Co., Room 402, Mutual Life Bldg., Buffalo, N. Y.
- BROWN, CLAUDE OSGOOD. 30 Columbia Park, Haverhill, Mass.
- BURNHAM, GEORGE EARLE. Res. Engr., Manila R. R., Manila, Philippine Islands.

JUNIORS (Continued)

- BURROWES, ROBERT WILLIAM. P. O. Box 556, Palm Beach, Fla.
 CARPENTER, J. C. Dist. Engr., Albay, Albay, Philippine Islands.
 CUMMIN, HART. Care, J. G. White Eng. Corporation, 43 Exchange Pl.,
 New York City.
 DAVIS, HAROLD MARTIN. With Sanford E. Thompson, Newton Highlands,
 Mass.
 DuBOIS, GEORGE BACHE. Care, Myers & McWilliams, Pittsford, N. Y.
 DUBOIS, GUSTAVO ADOLFO. Calle 17, No. 10, esq. a M, Havana, Cuba.
 FIELD, CLESSON HERBERT. With Lackawanna Steel Co. (Res., 516 Elmwood
 Ave.), Buffalo, N. Y.
 HADLEY, HOMER MORE. Res. Engr., C. N. P. Ry., Strawberry Vale, Van-
 couver Island, B. C., Canada.
 HAWLEY, CHARLES BURRIDGE. 1025 First St., Jackson, Mich.
 HUGHES, WILLIAM RICHARD, JR. -246 West Forest Ave., Detroit, Mich.
 McCLUBE, HUNTER. 436 Madison St., Gary, Ind.
 MALMBROS, NILS LORENTZ ALFRED. Supt., Ernest Flagg, 136 East 4th St.,
 Cincinnati, Ohio.
 MALONY, WALDEN LE ROY. Asst. Supt., Bates & Rogers Constr. Co., P. O.
 Box 1078, Spokane, Wash.
 MOORE, WALTER SMYTH. Asst. Engr., L. & N. R. R., Versailles, Ky.
 NEVIUS, SEARLE BROWN. Structural Steel Draftsman, Galloway & Mark-
 wart, 2294 Filbert St., San Francisco, Cal.
 POWELL, WILLIAM JENNER. Office Engr., City Engr.'s Office, Dallas, Tex.
 RUSSELL, ALEXANDER ALLEN MacVICAR. 2712 Stuart St., Berkeley, Cal.
 SHAW, GUY RAY. 225 Fifth St., Room 807, Des Moines, Iowa.
 SILSBEE, JAMES ALFRED. Elmira, N. Y.
 SLEPPY, KIRBY BALDWIN. Care, Inter-State Telegraph Co., Bishop, Cal.
 SNYDER, HUBERT EARL. Manbar, W. Va.
 STEWART, CHARLES SUMNER. North Platte, Nebr.
 STIRLING, VINCENT REYNOLDS. Chf. Engr., Govt., Moro Province, Zambo-
 anga, Moro Province, Philippine Islands.

REINSTATEMENTS

MEMBERS	Date of Reinstatement.
McCLINTOCK, WILLIAM EDWARD.....	Mar. 4, 1913

ASSOCIATE MEMBERS

DOWNMAN, JULIAN ROMNEY.....	Mar. 4, 1913
-----------------------------	--------------

RESIGNATIONS

MEMBERS	Date of Resignation.
PHILLIPS, JOSEPH LESLIE.....	Mar. 4, 1913

ASSOCIATE MEMBERS

HUNTINGTON, GEORGE DANFORTH.....	Mar. 4, 1913
RAVENS-CROFT, EDWARD HAWKS.....	Mar. 4, 1913
WHITNEY, HARRISON ALLEN.....	Mar. 4, 1913

DEATHS

- ARCHIBALD, PETER SUTHER. Elected Member, January 7th, 1885; died March 16th, 1913.
- COOMBS, PHILIP HENRY. Elected Member, March 7th, 1906; died March 6th, 1913.
- CRYSLER, ARTHUR GARFIELD. Elected Associate Member, August 31st, 1909; died October 22d, 1912.
- ELLIOTT, JOHN STUART. Elected Associate Member, April 6th, 1892; died March 25th, 1913.
- KELLOGG, CHARLES. Elected Member, June 2d, 1880; died March 23d, 1913.
- KUERSTEINER, EMIL EDWARD. Elected Member, December 1st, 1897; died March 10th, 1913.
- SPEARMAN, CHARLES. Elected Associate Member, October 5th, 1909; died August, 1912.

Total Membership of the Society, April 3d, 1913,

6 858.

MONTHLY LIST OF RECENT ENGINEERING ARTICLES OF INTEREST

(March 5th to April 1st, 1913)

NOTE.—This list is published for the purpose of placing before the members of this Society, the titles of current engineering articles, which can be referred to in any available engineering library, or can be procured by addressing the publication directly, the address and price being given wherever possible.

LIST OF PUBLICATIONS

In the subjoined list of articles, references are given by the number prefixed to each journal in this list:

- | | |
|--|---|
| (1) <i>Journal</i> , Assoc. Eng. Soc., Boston, Mass., 30c. | (28) <i>Journal</i> , New England Water-Works Assoc., Boston, Mass., \$1. |
| (2) <i>Proceedings</i> , Engrs. Club of Phila., Philadelphia, Pa. | (29) <i>Journal</i> , Royal Society of Arts, London, England, 6d. |
| (3) <i>Journal</i> , Franklin Inst., Philadelphia, Pa., 50c. | (30) <i>Annales des Travaux Publics de Belgique</i> , Brussels, Belgium, 4 fr. |
| (4) <i>Journal</i> , Western Soc. of Engrs., Chicago, Ill., 50c. | (31) <i>Annales de l'Assoc. des Ing. Sortis des Ecoles Spéciales de Gand</i> , Brussels, Belgium, 4 fr. |
| (5) <i>Transactions</i> , Can. Soc. C. E., Montreal, Que., Canada. | (32) <i>Mémoires et Compte Rendu des Travaux</i> , Soc. Ing. Civ. de France, Paris, France. |
| (6) <i>School of Mines Quarterly</i> , Columbia Univ., New York City, 50c. | (33) <i>Le Génie Civil</i> , Paris, France, 1 fr. |
| (7) <i>Gesundheits Ingenieur</i> , München, Germany. | (34) <i>Portefeuille Economiques des Machines</i> , Paris, France. |
| (8) <i>Stevens Institute Indicator</i> , Hoboken, N. J., 50c. | (35) <i>Nouvelles Annales de la Construction</i> , Paris, France. |
| (9) <i>Engineering Magazine</i> , New York City, 25c. | (36) <i>Cornell Civil Engineer</i> , Ithaca, N. Y. |
| (10) <i>Cassier's Magazine</i> , New York City, 25c. | (37) <i>Revue de Mécanique</i> , Paris, France. |
| (11) <i>Engineering</i> (London), W. H. Wiley, New York City, 25c. | (38) <i>Revue Générale des Chemins de Fer et des Tramways</i> , Paris, France. |
| (12) <i>The Engineer</i> (London), International News Co., New York City, 35c. | (39) <i>Technisches Gemeindeblatt</i> , Berlin, Germany, 0, 70m. |
| (13) <i>Engineering News</i> , New York City, 15c. | (40) <i>Zentralblatt der Bauverwaltung</i> , Berlin, Germany, 60 pf. |
| (14) <i>Engineering Record</i> , New York City, 10c. | (41) <i>Elektrotechnische Zeitschrift</i> , Berlin, Germany. |
| (15) <i>Railway Age Gazette</i> , New York City, 15c. | (42) <i>Proceedings</i> , Am. Inst. Elec. Engrs., New York City, \$1. |
| (16) <i>Engineering and Mining Journal</i> , New York City, 15c. | (43) <i>Annales des Ponts et Chaussées</i> , Paris, France. |
| (17) <i>Electric Railway Journal</i> , New York City, 10c. | (44) <i>Journal</i> , Military Service Institution, Governors Island, New York Harbor, 50c. |
| (18) <i>Railway and Engineering Review</i> , Chicago, Ill., 15c. | (45) <i>Colliery Engineer</i> , Scranton, Pa., 25c. |
| (19) <i>Scientific American Supplement</i> , New York City, 10c. | (46) <i>Scientific American</i> , New York City, 15c. |
| (20) <i>Iron Age</i> , New York City, 20c. | (47) <i>Mechanical Engineer</i> , Manchester, England, 3d. |
| (21) <i>Railway Engineer</i> , London, England, 1s. 2d. | (48) <i>Zeitschrift, Verein Deutscher Ingenieure</i> , Berlin, Germany, 1. 60m. |
| (22) <i>Iron and Coal Trades Review</i> , London, England, 6d. | (49) <i>Zeitschrift für Bauwesen</i> , Berlin, Germany. |
| (23) <i>Railway Gazette</i> , London, England, 6d. | (50) <i>Stahl und Eisen</i> , Düsseldorf, Germany. |
| (24) <i>American Gas Light Journal</i> , New York City, 10c. | (51) <i>Deutsche Bauzeitung</i> , Berlin, Germany. |
| (25) <i>American Engineer</i> , New York City, 20c. | (52) <i>Rigasche Industrie-Zeitung</i> , Riga, Russia, 25 kop. |
| (26) <i>Electrical Review</i> , London, England, 4d. | (53) <i>Zeitschrift, Oesterreichischer Ingenieur und Architekten Verein</i> , Vienna, Austria, 70h. |
| (27) <i>Electrical World</i> , New York City, 10c. | (54) <i>Transactions</i> , Am. Soc. C. E., New York City, \$4. |

- (55) *Transactions*, Am. Soc. M. E., New York City, \$10.
 (56) *Transactions*, Am. Inst. Min. Engrs., New York City, \$6.
 (57) *Colliery Guardian*, London, England, 5d.
 (58) *Proceedings*, Engrs.' Soc. W. Pa., 803 Fulton Bldg., Pittsburgh, Pa., 50c.
 (59) *Proceedings*, American Water-Works Assoc., Troy, N. Y.
 (60) *Municipal Engineering*, Indianapolis, Ind., 25c.
 (61) *Proceedings*, Western Railway Club, 225 Dearborn St., Chicago, Ill., 25c.
 (62) *Industrial World*, 59 Ninth St., Pittsburgh, Pa., 10c.
 (63) *Minutes of Proceedings*, Inst. C. E., London, England.
 (64) *Power*, New York City, 5c.
 (65) *Official Proceedings*, New York Railroad Club, Brooklyn, N. Y., 15c.
 (66) *Journal of Gas Lighting*, London, England, 6d.
 (67) *Cement and Engineering News*, Chicago, Ill., 25c.
 (68) *Mining Journal*, London, England, 6d.
 (69) *Der Eisenbau*, Leipzig, Germany.
 (71) *Journal*, Iron and Steel Inst., London, England.
 (71a) *Carnegie Scholarship Memoirs*, Iron and Steel Inst., London, England.
 (72) *American Machinist*, New York City, 15c.
 (73) *Electrician*, London, England, 18c.
 (74) *Transactions*, Inst. of Min. and Metal., London, England.
 (75) *Proceedings*, Inst. of Mech. Engrs., London, England.
 (76) *Brick*, Chicago, Ill., 10c.
 (77) *Journal*, Inst. Elec. Engrs., London, England, 5s.
 (78) *Beton und Eisen*, Vienna, Austria, 1, 50m.
 (79) *Forscherarbeiten*, Vienna, Austria.
 (80) *Tonindustrie Zeitung*, Berlin, Germany.
 (81) *Zeitschrift für Architektur und Ingenieurwesen*, Wiesbaden, Germany.
 (82) *Mining and Engineering World*, Chicago, Ill., 10c.
 (83) *Gas Age*, New York City, 15c.
 (84) *Le Ciment*, Paris, France.
 (85) *Proceedings*, Am. Ry. Eng. Assoc., Chicago, Ill.
 (86) *Engineering-Contracting*, Chicago, Ill., 10c.
 (87) *Railway Engineering and Maintenance of Way*, Chicago, Ill., 10c.
 (88) *Bulletin of the International Ry. Congress Assoc.*, Brussels, Belgium.
 (89) *Proceedings*, Am. Soc. for Testing Materials, Philadelphia, Pa., \$5.
 (90) *Transactions*, Inst. of Naval Archts., London, England.
 (91) *Transactions*, Soc. Naval Archts. and Marine Engrs., New York City.
 (92) *Bulletin*, Soc. d'Encouragement pour l'Industrie Nationale, Paris, France.
 (93) *Revue de Métallurgie*, Paris, France, 4 fr. 50.
 (94) *The Boiler Maker*, New York City, 10c.
 (95) *International Marine Engineering*, New York City, 20c.
 (96) *Canadian Engineer*, Toronto, Ont., Canada, 10c.
 (98) *Journal*, Engrs. Soc. Pa., Harrisburg, Pa., 30c.
 (99) *Proceedings*, Am. Soc. of Municipal Improvements, New York City, \$2.
 (100) *Professional Memoirs*, Corps of Engrs., U. S. A., Washington, D. C., 50c.
 (101) *Metal Worker*, New York City, 10c.
 (102) *Organ für die Fortschritte des Eisenbahnwesens*, Wiesbaden, Germany.
 (103) *Mining and Scientific Press*, San Francisco, Cal., 10c.
 (104) *The Surveyor and Municipal and County Engineer*, London, England, 6d.
 (105) *Metallurgical and Chemical Engineering*, New York City, 25c.
 (106) *Transactions*, Inst. of Min. Engrs., London, England, 6s.
 (107) *Schweizerische Bauzeitung*, Zürich, Switzerland.
 (108) *Southern Machinery*, Atlanta, Ga., 10c.

LIST OF ARTICLES

Bridges.

- New Bridge Over the Hwang Ho (Yellow River).* (23) Feb. 7.
 Reinforced Concrete Arches in Pittsburgh.* (60) Mar.
 A Novel Bridge.* (Tacoma, Wash.) J. O. Bashford. (60) Mar.
 Calumet River Bascule Bridge, B. & O. R. R.* (87) Mar.
 New Delaware River Bridge at Yardley, Pa.* E. Chamberlain. (87) Mar.
 The Protection of Opening Bridges.* (21) Mar.
 Curves for Determining Areas of Openings for Road Culverts and Bridges.* (Report of Drainage Committee, Illinois Soc. of Engrs. and Surveyors.) (86) Mar. 5.
 A Reinforced Concrete Highway Bridge with Five 161-Ft. Arch Spans.* (86) Mar. 5.
 The Design and the Methods and Cost of Constructing a Flat Slab Reinforced Concrete Highway Bridge.* E. W. Robinson. (86) Mar. 5.
 The Fifth Street Viaduct, Fitchburg, Mass.* (13) Mar. 6.

*Illustrated.

Bridges—(Continued).

- The Widening of the Jumna Bridge at Delhi.* (23) Mar. 7.
 Difficulties in Placing the Substructure for a Swing Bridge, Cofferdam of Wood and Sheet Steel Piling for Deep Riverbed Excavations through Mud Boulders and Timber.* (14) Mar. 8.
 Catawba River Bridge near Charlotte, North Carolina.* (14) Mar. 8.
 Bascule Bridges.* H. G. Tyrrell. (96) Mar. 13; (18) Mar. 15.
 Concreting the Milwaukee Avenue Viaduct.* (14) Mar. 15.
 Methods of Constructing the Georgetown Bridge Over the Wabash River for Cass County, Indiana.* (86) Mar. 19.
 Method of Constructing a Two-Part Reinforced Concrete Arch Bridge with General Unit Costs.* Charles F. Hill. (86) Mar. 19.
 Method and Unit Costs of Constructing Piers and Abutments for a High Steel Viaduct for the Fort Dodge, Des. Moines & Southern (Electric) Ry. C. J. Steigleder. (86) Mar. 19.
 The Crooked River Bridge, Oregon.* Clement E. Chase. (13) Mar. 20.
 A Large Reinforced-Concrete Girder Bridge.* Harry J. Rodgers. (13) Mar. 20.
 Constructing a Long Concrete Arch Bridge in Spokane, Washington; A Seven-Span Structure 940 Feet Long Between Abutments.* J. F. Green. (14) Mar. 22; (13) Mar. 27.
 Nisqually River Pipe-Line Bridge.* (14) Mar. 22.
 A Chinese Railway Bridge, Spanning the World's Most Treacherous River.* F. C. Coleman. (19) Mar. 22.
 The Cost and Construction of a Concrete Girder Bridge at Monett, Missouri.* W. C. Davidson. (86) Mar. 26.
 The Milwaukee Ave. Viaduct, Chicago. L. K. Sherman. (Abstract of paper read before the Ill. Soc. of Engrs. and Surveyors.) (13) Mar. 27.
 Bank Street High Level Bridge, Ottawa.* L. McLaren Hunter. (96) Mar. 27.
 A Novel Design for a High Abutment.* (Lehigh Valley R. R.) E. F. Ackerman. (15) Mar. 28.
 Group of Railroad Plate-Girder Bridges at Akron, Ohio.* (14) Mar. 29.
 Contribution à l'Etude des Ponts Suspendus Semi-Rigides et des Ponts Suspendus Rigides. L. Descans et J. Rimbaut. (30) Feb.
 Consolidation par Injection de Ciment du Viaduc des Cents Arches Situé sur la Ligne Paris-Bordeaux.* Adam. (34) Feb.
 Viaduc de la Donne. James Boudet. (35) Mar.
 Les Nouveaux Ponts de Constantine (Algérie), le Pont de Sidi Rached.* (33) Mar. 1.
 Le Service d'Entretien des Grands Ponts de New York.* (33) Mar. 8.
 Vom ersten Wettbewerb für den Entwurf zu einer Strassenbrücke über den Rhein in Cöln. A. Rohn. (107) Feb. 22.
 200 m langer Eisenbetonviadukt über die Listertalsperre bei Stein.* Viktor Maulner. (78) Feb. 26.
 Die Verwendung hochwertigen Stabes als Brückenmaterial.* Rudolf Schanzer. (53) Feb. 28; (69) Mar.
 Die neue Strassenbrücke bei Rothenburg, Kanton Luzern.* (107) Mar. 1.
 Die Verkehrsübergabe der neuen Oderbrücke bei Greifenhagen.* (40) Mar. 1.
 Das Alteisen der abgebrochenen Eisenbahnbrücke über den Rhein beim Dorfe Hamm.* Bohny. (40) Mar. 8.
 Der 240 m lange Schleppbahnviadukt aus Eisenbeton in Pöchlarn an der Donau.* Leo Kauf. (53) Mar. 14.
 Neuere weitgespannte Eisenbetonbrücken.* Theodor Gesteschl. (78) Serial beginning Mar. 14.

Electrical.

- Electricity, a Short Paper Addressed to Colliery Managers. Robert Nelson. (Paper read before the North Staffordshire Inst. of Min. and Mech. Engrs.) (106) Vol. 45, Pt. 1.
 The Northwest Station of the Commonwealth Edison Company.* W. L. Abbott. (4) Feb.
 The Magnetism of Permanent Magnets.* Silvanus P. Thompson. (77) Feb.
 Earthed Versus Unearthed Neutrals on Alternating Current Systems.* J. S. Peck. (77) Feb.
 The Turbo-Converter; a High-Speed Direct-Current Generating Unit.* F. Creedy. (77) Feb.
 The Control of Meters, Public Lamps and Other Apparatus from the Central Station.* W. Duddell, A. H. Dykes and H. W. Handcock. (77) Feb.
 Notes on the Testing of Ebonite for Electrical Purposes.* C. C. Paterson, E. H. Rayner and A. Kinnes. (77) Feb.
 An Automatic Electric Light Plant.* (12) Feb. 28.
 Kinetographic Recording of Ballistic and Physical Phenomena with the Aid of the Direct-Current, Quenched-Spark Gap.* C. Crane and B. Glatzel. (Translation from Verhandlungen of the German Physical Society.) (73) Feb. 28.

*Illustrated.

Electrical—(Continued).

- A Simple Kelvin Double Bridge for Comparing Two Nearly Equal Low Resistances.* S. W. Melsom. (73) Feb. 28.
- Modern Methods of Electric Wiring.* Frank Broadbent. (Abstract of paper read before the Assoc. of Engrs.-in-Charge.) (47) Feb. 28.
- The Sounder in Submarine Telegraphy.* Edward Raymond-Barter. (26) Feb. 28.
- Municipal Lighting Plant of Troy, Ohio.* L. A. Pool. (60) Mar.
- Induction Motor Details.* W. Baxter. (Paper read before the Assoc. of Min. Elec. Engrs.) (22) Mar. 7.
- Electric Street Lighting at Norwich.* J. R. Dick. (73) Mar. 7.
- A 60 000 Volt Underground Cable Installation.* Leon Lichtenstein. (Paper read before the Elektrotechnischer Verein.) (26) Mar. 7.
- Ice Coating on Overhead Conductors, Theory Based on a Destructive Ice Storm in Portland, Oregon.* William R. King. (14) Mar. 8.
- Electrical Plant of El Guindo Co., Spain.* C. A. Tupper. (82) Mar. 8.
- The Acetylene-Electric Flame.* C. F. Lorenz. (27) Mar. 8.
- Largest Direct Current Generators Ever Built.* (Cleveland Illuminating Plant.) (62) Mar. 10.
- Cost of Constructing a Turbo-Generator Power Plant, Transmission Line and Sub-structures. James W. Malcolmson. (From *Western Engineering*.) (86) Mar. 12.
- Electric Drive for Fans and Blowers. S. R. Stone. (72) Mar. 13.
- The Lodge-Chambers System of Wireless Telegraphy.* F. J. Chambers. (73) Serial beginning Mar. 14.
- The Installation of Power-Factor Indicators.* Leonard Murphy. (26) Mar. 14.
- Methods of Splicing Wires and Cables.* H. V. Talbot. (27) Mar. 15.
- Electric Power in Wisconsin-Illinois Fields.* Warren Aikens. (82) Serial beginning Mar. 15.
- Electrolysis from Stray Electric Currents.* Albert F. Ganz. (Paper read before the New England Assoc. of Gas Engrs.) (24) Serial beginning Mar. 17.
- Lake Shore Generating Plant.* A. D. Williams. (64) Mar. 18.
- Using the Reversing Motor with Economy.* A. G. Popeke. (72) Mar. 20.
- New Ultra-Violet Ray Lamps. (Abstract from *La Technique Sanitaire et Municipale*.) (13) Mar. 20.
- Crane Plant of an Italian Steel Works.* Alfred Gradenwitz. (26) Mar. 21.
- Relative Efficiency and Advantages of Direct, Semi-Direct and Indirect Lighting. L. Crouch. (26) Mar. 21.
- Hydro-Electric Power-Plant in San Juan, Argentina.* (11) Mar. 21.
- Transmission Tower Design for the Central Colorado Power Company.* W. E. Belcher. (27) Mar. 22.
- Stresses Produced in a Transmission Line by Breaking of a Conductor.* R. S. Brown. (27) Mar. 29.
- Central Power Plant of Montgomery, Ala.* Warren P. Rogers. (64) Apr. 1.
- Das Silbervoltmeter.* E. B. Rosa and G. W. Vinal. (41) Feb. 27.
- Die periodische Schwankung der Lichtstärke von Metallfadengühlampen bei Wechselstrom.* Absalon Larsen. (41) Feb. 27.
- Silit, ein neues elektrisches Widerstandsmaterial.* Kurt Perlewitz. (41) Mar. 6.
- Gesetz der Koronabildung und die dielektrischen Eigenschaften der Luft.* F. W. Peek, Jr. (41) Mar. 13.
- Die Versorgung Bayerns mit Elektrizität. Oskar v. Miller. (41) Mar. 13.
- Lichtstrom und Lichtintensität von Leuchtlinien. K. Norden. (41) Mar. 13.
- Ueber die Verdrillung der Doppeladern vieladriger Fernsprechkabel.* F. Lanze. (41) Mar. 20.
- Der Bau und Betrieb des badischen Murgkraftwerkes.* Theodor Koehn. (41) Mar. 20.

Marine.

- Macfarlane's Windsor Winch (For Loading and Unloading Ships).* (23) Feb. 28.
- Liquid Fuel as a Source of Energy for the Propulsion of Ships and its Proved Advantages Over Coal.* C. Zulver. (Paper read before the Inst. of Mar. Engrs.) (12) Feb. 28; (47) Mar. 7.
- The Design and Construction of Oil Steamers.* James Montgomerie. (Paper read before the Inst. of Engrs. and Shipbuilders in Scotland.) (11) Serial beginning Feb. 28.
- Multiple Gun-Turrets in Warships.* (11) Feb. 28.
- Recent Warships for the French Admiralty.* (95) Mar.
- Single Screw Motor Ship of 1500 B. H. P.* J. Rendell Wilson. (95) Mar.
- New Railway Drydock Plant.* (95) Mar.
- Great Britain's Mighty Warships.* (96) Mar. 6.
- A 500-Ton Reinforced-Concrete Scow.* C. E. Sudler. (13) Mar. 6.
- A Geared Turbine Cargo Steamer.* (12) Mar. 7.
- Guns for Submarines. Alfred Gradenwitz. (11) Mar. 7; (46) Mar. 8.
- 23-Horse Power Djin Petroleum Marine Motor.* (11) Mar. 7.

*Illustrated.

Marine—(Continued).

- The Spanish Quadruple-Screw Liner *Reina Victoria-Eugenia*.* (11) Serial beginning Mar. 7.
- Recent Experiences of Babcock & Wilcox Boilers for Marine Purposes.* James H. Rosenthal. (Paper read before the Inst. of Mar. Engrs.) (47) Mar. 14.
- An Interesting Small-Powered Diesel Motor (for Ships).* (12) Mar. 14.
- The Diesel Oil Tank Ship *Hagen*.* (12) Mar. 21.
- The Factor of Safety in Marine Boiler Practice.* William S. Dawson. (Paper read before the Marine Engrs' Assoc.) (62) Mar. 31.
- The Clyde Line Coastwise Steamship *Lenape*. (95) Apr.
- Motor Lightship *Burgermeister O'Swald*.* J. Rendell Wilson. (95) Apr.
- New Steamers for Chesapeake Bay Service.* (95) Apr.
- Das Schiffsbauwerk für den Abstieg des Grossschiffahrtsweges Berlin, Stettin nach der Oder bei Niederfinow.* (51) Mar. 15.

Mechanical.

- The Evolution of the Flax Spinning Spindle.* John Horner. (75) July.
- Wire Ropes for Lifting Appliances and Some Conditions That Effect Their Durability.* Daniel Adamson. (75) July.
- Reciprocating Straight-Blade Sawing-Machines.* Charles Wicksteed. (75) July.
- Commercial Utilization of Peat for Power Purposes. H. V. Pegg. (75) July.
- Manufacture of Raw Sugar in the Philippine and Hawaiian Islands. C. A. Browne. (6) Jan.
- Acceptance Test of Large High Vacuum Condenser.* Paul A. Bancel. (98) Feb.
- The Wolverhampton Gas-Works.* (66) Feb. 25.
- Progress in By-Product Recovery at Coke-Ovens. J. E. Christopher. (Paper read before the Soc. of Chemical Industry; abstract from *Journal of the Soc. of Chemical Industry*.) (66) Feb. 25; (22) Feb. 28.
- Shop Lighting, High and Low Pressure.* W. Dawes. (Paper read before the Yorkshire Junior Gas Assoc.) (66) Feb. 25.
- The Chapman Rotary Gas Producer.* (22) Feb. 28.
- Surface-Condensing Plant.* A. Beeston. (Paper read before the Midland Branch of the National Assoc. of Colliery Managers.) (22) Serial beginning Feb. 28.
- The Supply of Coal Tar, Tar Oils and Pitch. W. J. A. Butterfield, Assoc. Inst. C. E. (104) Feb. 28.
- Aeroplanes at the Recent Aero Exhibition at Olympia. (11) Feb. 28.
- Cooling-Towers at Edinburgh Power-Station.* (11) Feb. 28.
- Pulverized Coal as a Fuel.* H. R. Barnhurst. (105) Mar.; (96) Mar. 27; (62) Mar. 17.
- Rivets and Riveting. (From *Ryerson's Monthly Journal*.) (94) Mar.
- Recent Developments in Steam Turbines. H. T. Herr. (3) Mar.
- The Santa Cruz Portland Cement Company's Plant, Davenport, California.* Llewellyn F. Bachman. (67) Mar.
- Doolittle and Wilcox, Limited, Crushing Plant.* (67) Mar.
- Worcester Sand-Lime Brick Co.'s New Plant.* (67) Mar.
- Dividing Line Between Refractory and Non-Refractory Clays Determined by Heat Test.* M. F. Beecher. (From *Iowa Engineer*.) (76) Mar. 1.
- Working of Sulphate Plants.* W. Walker Atley. (Paper read before the Yorkshire Junior Gas Assoc.) (66) Mar. 4.
- The New Works of Messrs. Mather and Platt Limited.* (57) Mar. 7; (47) Mar. 7.
- Coke and By-Product Plant at Nunnery Colliery.* (22) Mar. 7.
- Aerial Ropeway at Holbrook Colliery.* (22) Mar. 7.
- Modern High-Speed Gearing.* H. Hubert Thorne. (Abstract of paper read before the Rugby Eng. Soc.) (22) Mar. 7; (47) Mar. 7.
- Improvements in Sand and Gravel Washing. Raymond W. Dull. (Paper read before the National Assoc. of Cement Users.) (18) Mar. 8.
- Derricks for the Erection of Steel Work. (14) Mar. 8.
- The Analysis of Water Gas Purification.* E. C. Uhlrig. (Paper read before the Am. Gas Inst.) (24) Mar. 10.
- Tar from Vertical Retorts. T. Stenhouse. (Paper read before the Soc. of Chemical Industry.) (66) Mar. 11.
- The Vertical Retort of the Shales-Oil Industry. G. T. McKillop. (Paper read before the Scottish Junior Gas Assoc.) (66) Mar. 11.
- The Anvers-Zurenborg Works of the Imperial Continental Gas Assoc. (66) Mar. 11.
- New Sharp Mill Spray Cooling Pond.* Warren O. Rogers. (64) Mar. 11.
- Accuracy and Limitations of Coal Analysis. A. C. Fieldner. (Paper read before the Am. Coal Min. Inst.) (64) Mar. 11.
- A Compact Sand and Gravel Washing Plant.* (13) Mar. 13.
- Plant for Making Automobile Tool Boxes.* (20) Mar. 13.
- Cost of Running Annealing and Heating Furnaces. J. Lord. (Abstract of paper read before the Royal Technical College.) (22) Mar. 14.
- Oxy-Acetylene Welding and Cutting.* Henry W. Jacobs. (15) Mar. 14.

*Illustrated.

Mechanical—(Continued).

- Atmospheric Pollution, A Standard Method of Measuring its Amount and Character.* (For Smoke.) John B. C. Kershaw. (104) Mar. 14.
- Storage of Coal Under Water.* R. G. Hall. (103) Mar. 15.
- Coal Gas Construction. R. B. Brown. (Paper read before the New England Assoc. of Gas Engrs.) (83) Mar. 15.
- Utilization of Pulverized Fuel for Boiler Firing.* C. H. Wright. (27) Mar. 15.
- The 10 000-Horsepower Turbines at Keokuk, Description of the Design, Manufacture and Transportation of the Largest Water-Wheels Ever Built.* Chester W. Larner. (14) Mar. 15; (20) Mar. 13.
- The Centenary of Gas Lighting, and Its Industrial Development. W. J. Liberty. (Paper read before the Illuminating Eng. Soc.) (66) Mar. 18.
- Benjol from Coal by the Del Monte Process. W. J. A. Butterfield. (Abstract from *The Car.*) (66) Mar. 18.
- High-Pressure Gas Distribution.* N. B. Hodgkin. (Paper read before the Midland Junior Gas Assoc.) (66) Serial beginning Mar. 18.
- The Prat System of Induced Draft. Louis Prat. (Translation from French.) (64) Mar. 18.
- Producer Gas in Heating Furnaces. Everard Brown. (64) Mar. 18.
- Methods Employed in Leaf Spring Manufacture.* E. F. Lake. (20) Mar. 20.
- Chain-Belt Driven Concrete-Mixer.* (11) Mar. 21; (60) Mar.
- Six-Spindle Drilling Machine.* (For Water-Tube Boilers.) (11) Mar. 21.
- The Corrosion of Distilling Condenser Tubes. Arnold Philip, A. M. Inst. E. E. (Paper read before the Inst. of Metals.) (47) Mar. 21.
- Six Wheeled Omnibus.* Stanley Petman. (46) Mar. 22.
- Wire Drawing.* Erik Oberg. (From *Machinery.*) (19) Mar. 22.
- The History of the Smoke Nuisance and of Smoke Abatement in Pittsburgh. John O'Connor. (62) Mar. 24.
- Winter Work in Refrigerator Plant.* Fred Ophuls. (64) Mar. 25.
- New Wheeler-Balcke Natural Draft Cooling Tower.* (64) Mar. 25; (20) Mar. 13; (62) Mar. 31.
- Reinforced Concrete Beating Engine Tubs, Milton Leatherboard Co. Mills.* I. W. Jones. (86) Mar. 26.
- A Roller Ramming Molding Machine.* (20) Mar. 27.
- European Electric Steel Automobile Castings.* E. F. Lake. (20) Mar. 27.
- A 5 350-h.p. Steam-Turbine Generator Unit with Speed-Reduction Gears.* (13) Mar. 27.
- Pitot Tube in Gas Measurement.* C. E. McQuigg. (16) Mar. 29.
- Factory Methods of Testing Automobile Motors.* Stanley Petman. (46) Mar. 29.
- Carbureting with Tar, the Rincker-Wolter Water Gas Plant.* (24) Mar. 31.
- Opening Up a New Suburban Gas Territory.* J. E. Bullard. (83) Apr. 1.
- Talbot Water-Tube Boiler.* T. H. Heath. (64) Apr. 1.
- The Rational Utilization of Coal.* F. E. Junge. (64) Apr. 1.
- Les Compteurs d'Air Comprimé et l'Evaluation de la Consommation d'Air. W. Glucksmann. (31) 1912, Pt. 5.
- Bennes Preneuses pour la Manutention des Matières Pondéreuses.* J. E. Giraud. (33) Serial beginning Feb. 8.
- Les Roues et les Bandages pour Poids Lourds.* D. Renaud. (33) Serial beginning Feb. 22.
- Grue de 150 Tonnes du Port Militaire de Lorient.* R. Bazin. (33) Feb. 22.
- L'Energie Disponible dans les Fours à Coke à Récupération de Sous-Produits sans Régénération de Chaleur.* Eugène Lecocq. (93) Mar.
- Pompe à Chaîne Hélice, Système Bessonnet-Favre.* (34) Mar.
- Epurateur d'Eau de Condensation, Système Paterson.* (34) Mar.
- Der Ausfluss des Wasserdampfes aus Mündungen.* August Loschge. (48) Jan. 11.
- Die vierte Pariser Luftschiffahrts-Ausstellung (Salon d'Aéronautique) am 26. Oktober bis 10. November 1912.* Ansbart Vorreiter. (48) Serial beginning Jan. 18.
- Die Krananlagen der Società degli Alti Forni, Fonderie ed Acciaierie di Terni.* H. Thieme. (48) Jan. 18.
- Die Steigerung der Leistung von Verbrennungsmotoren und ein neuer Sechstaktmotor.* Emil Schimanek. (48) Jan. 25.
- Entlastung für Kolbenschieber.* Friedr. Becher. (48) Feb. 1.
- Untersuchungen an Pressluftwerkzeugen.* R. Harm. (48) Feb. 1.
- Die Koksofenanlage der Indiana Steel Co. in Gary.* H. Groeck. (48) Serial beginning Feb. 8.
- Ein neuer Braunkohlenbrikettkessel.* Wellandt. (7) Feb. 22.
- Ueber neue Röhrenglaserien, Bauart Ardel.* Robert Ardel. (50) Feb. 27.
- Die Vorgänge im Gaserzeuger auf Grund des zweiten Hauptsatzes der Thermodynamik.* Kurt Neumann. (50) Mar. 6.
- Zur Entwicklungsgeschichte der Druckluftanlagen. A. Riedler. (53) Mar. 7.
- Ueber den Einfluss der mechanischen Formgebung auf die Eigenschaften von Eisen und Stahl.* P. Goerens. (Paper read before the Eisenhüttenmännischen Institut der Kgl. Techn. Hochschule, Aachen.) (50) Mar. 13.

*Illustrated.

Metallurgical.

- Minerals Separation Plant at Kylv Copper Mines, N. L.* H. Hardy Smith. (Paper read before the Australasian Inst. of Min. Engrs.) (105) Mar.
- Four Papers on the Production and Uses of Alumina.* J. W. Richards, S. A. Tucker, A. H. Cowles and L. E. Saunders. (Papers read before the Am. Chemical Soc., the Am. Electrochemical Soc., and the Soc. of Chemical Industry.) (105) Mar.
- Titanium as Used in Steel Making. E. F. Lake. (105) Mar.
- The Gayley Dry Blast Process. Henry M. Howe. (Paper read before the Soc. of Chemical Industry.) (105) Mar.
- Test Bars for Nonferrous Alloys. Jesse L. Jones. (Paper read before the Am. Inst. of Metals.) (108) Mar.
- Crucible Process of Steel Making.* H. C. Williams. (108) Mar.
- Continuous Agitation of Slime with Barren Cyanide Solution.* C. F. Spaulding. (103) Mar. 1.
- Dressing Western Zinc Ores.* Frank A. Bird. (103) Mar. 1.
- Baltic Regrinding Plant, Redridge, Michigan.* A. H. Sawyer. (16) Mar. 8.
- Shasta County Smelter-Fume Problems.* J. Nelson Nevins. (Report to the Los Angeles Chamber of Mines and Oil.) (103) Mar. 8.
- Heating Furnaces and Their Relation to the Heat-Treatment of Metals. J. Lord. (Abstract of paper read before the Royal Technical College.) (66) Mar. 11.
- Improvements at Lluvia de Oro Mill.* H. R. Conklin. (16) Serial beginning Mar. 15.
- Melting Furnace at Rio Plata Mill.* Alvin R. Kenner. (16) Mar. 15.
- Dry vs. Wet Crushing at Kalgoorlie. M. W. von Bernewitz. (103) Mar. 15.
- Milling vs. Hand Sorting of Lead Ore.* R. S. Handy. (103) Mar. 15.
- Tool Steel from a Salesman's Point of View. C. M. Bigger. (Paper read before the Metal Trades Foremen's Club.) (20) Mar. 20.
- Practical Heat Treatment of Admiralty Gun-Metal.* H. S. Primrose and J. S. G. Primrose. (Abstract of paper read before the Inst. of Metals.) (47) Mar. 21.
- Refining at Pittsburgh-Silver Peak Mill.* Lyon Smith. (16) Mar. 22.
- Continuous Decantation with Dorr Thickeners. Jesse Simmons. (16) Mar. 22.
- Sand, Slime and Colloids in Ore Dressing. Gelasio Caetani. (103) Mar. 22.
- The Freeland Charging Machine (for Smelter).* C. W. Renwick. (103) Mar. 22.
- Progress in Colorado Mining and Milling.* W. H. Graves. (82) Mar. 29.
- Precipitation by the Zinc-Sheet Method at Cava, Spain. James Hutton. (Paper read before the Chemical Metal and Min. Soc. of South Africa.) (82) Mar. 29.
- The Graphite Industry of Pennsylvania.* Benjamin L. Miller. (82) Mar. 29.
- Sur les Constituants en Aiguilles des Alliages, Bronzes d'Aluminium et d'Etain Spéciaux.* Félix Robin. (92) Jan.
- Les Hauts Fourneaux à Parois Minces.* (33) Feb. 8.
- Sur les Essais de Trempe. (93) Mar.
- Les Courbes du Liquidus et le Diagramme d'Etat du Système Ternaire Aluminium-Cuivre-Zinc (Alliages Riches en Cuivre). H. C. H. Carpenter et C. A. Edwards. (From *Inter. Zeitsch. f. Metallographic.*) (93) Mar.
- Les Hauts Fourneaux et Acières de Caen.* (33) Mar. 1.
- Die Elektrodenfassungen bei Elektroöfen. (50) Serial beginning Mar. 20.
- Ueber Siemens-Martin-Öfen, Bauart Maerz. Rud. Becker. (50) Mar. 20.

Mining.

- The Generation and Use of Compressed Air for Mining.* George Blake Walker. (Paper read before the Midland Inst. of Min., Civ., and Mech. Engrs.) (106) Vol. 44, Pt. 3.
- The Relation Between Subsidence and Packing, with Special Reference to the Hydraulic Stowing of Goaves. George Knox. (Paper read before the Manchester Geol. and Min. Soc.) (106) Vol. 44, Pt. 3.
- A New Mining Dial.* Frederick P. Mills. (Paper read before the Geol. and Min. Soc.) (106) Vol. 44, Pt. 3.
- Some Novel Devices in Connexion with Electrical Pumping Installations in Mines. R. Herzfeld. (Paper read before the Midland Inst. of Min., Civ., and Mech. Engrs.) (106) Vol. 44, Pt. 3.
- A Boring for Coal at Claverley, near Bridgnorth, and Its Bearing on the Extension Westwards of the South Staffordshire Coal-Field. Walcott Gibson. (Paper read before the South Staffordshire and Warwickshire Inst. of Min. Engrs.) (106) Vol. 45, Pt. 1.
- An Investigation Into the Effect of Atmospheric Pressure on the Height of the Gas-Cap.* C. J. Wilson. (Paper read before the Min. Inst. of Scotland.) (106) Vol. 45, Pt. 1.
- The Jherria Coal-Field (India) and Its Future Development. George Harold Greenwell. (Paper read before the North of England Inst. of Min. and Mech. Engrs.) (106) Vol. 45, Pt. 1.
- Colliery Cables.* William Thomson Anderson. (Paper read before the Manchester Geol. and Min. Soc.) (106) Vol. 45, Pt. 1.

*Illustrated.

Mining—(Continued).

- Principles of Mine Valuation. James R. Finlay. (Paper read before the Dept. of Min., Columbia Univ.) (6) Jan.
- Electricity in Anthracite Mining.* William Paul Jennings. (6) Jan.
- Mine Rescue Work in Canada.* (57) Feb. 28.
- Notes on Mine Gas Problems. George A. Burrell. (Paper read before the Virginia Coal Min. Inst.) (57) Feb. 28.
- Common Sense Mine Ventilation. J. C. Gaskill. (Paper read before the West Virginia Min. Inst.) (45) Mar.
- Too Much Ventilation (In Mines). W. H. Booth. (45) Mar.
- Coal Mine Ventilation. Austin King. (45) Mar.
- Gases Met With in Coal Mines.* (45) Serial beginning Mar.
- The World's Greatest Iron-Ore Deposits.* Day Allan Willey. (9) Mar.
- The Karns Tunneling Machine.* O. J. Grimes. (13) Mar. 6.
- Troubles Resulting from Proximity to Gas and Oil Wells. L. M. Jones. (13) Mar. 6.
- Gas and Oil Wells in Coal Fields. George S. Rice. (13) Mar. 6; (82) Mar. 22.
- Suggestion for Laws and Regulations (Location of Oil-Well). (13) Mar. 6.
- Electric Cables for Shafts of Mines.* E. Kilburn Scott. A. M. Inst. C. E. (Paper read before the Assoc. of Min. Elec. Engrs.) (22) Serial beginning Mar. 7.
- Mining Operations in Idaho During 1912.* Robert N. Bell. (82) Mar. 8.
- Proposed Regulation of Gold-Dredging. Charles Janin. (103) Mar. 8.
- Shaft Sinking at the Indiana Mine.* Claude T. Rice. (16) Mar. 8.
- Notes on Mine Sampling.* G. C. Bateman. (Paper read before the Canadian Min. Inst.) (16) Mar. 8.
- Bucket Dredger for Nigerian Tin Deposits.* (11) Mar. 14.
- Approved Safety Lamps.* (57) Mar. 14.
- Electric Equipment, American Nettle Mine. T. A. Tefft. (16) Mar. 15.
- Sulphur and Iron Deposits of Virginia.* J. F. Springer. (82) Mar. 15.
- The Use of Coal-Cutters for Blackband Ironstone at Parkhouse Mine.* (22) Mar. 21.
- Iron Ore Sorting Plant at the Gellivare Mines, Sweden.* Harry J. H. Nathorst. (From *Jern-Kontorets Annaler*.) (22) Mar. 21.
- Methods and Costs, Mother Lode Mine, B. C.* E. Hibbert. (16) Mar. 22.
- Graphics Applied to Fault Problems.* (Mining.) E. R. Rice. (16) Mar. 22.
- Progressive Mines in the Iron River District.* Geo. E. Edwards. (82) Mar. 22.
- The Monarch Mine in British Columbia.* Newton W. Emmens. (82) Mar. 22.
- Rock Asphalt Deposits of Oklahoma.* L. C. Snider. (82) Mar. 22.
- Acetylene Lamps in Mines.* R. Cremer. (68) Serial beginning Mar. 22.
- A Tungsten Mine in Nova Scotia.* V. G. Hills. (103) Mar. 22.
- Exhaust Steam and Its Utilization at Collieries and Mines.* J. M. Gordon. (Paper read before the Canadian Min. Inst.) (96) Mar. 27.
- A Mine Locomotive Designed for Accessibility.* (13) Mar. 27.
- Lowering Supplies at Western Mines.* Claude T. Rice. (82) Mar. 29.
- Electric vs. Compressed Air Hoists.* (For Mines.) K. A. Pauly. (16) Mar. 29.
- Reconstruction of an American River Flume.* Lewis H. Eddy. (16) Mar. 29.
- Sellbahn für Vergnügungsreisende im Kgl. Salzbergwerk zu Berchtesgaden.* L. Schütt. (48) Jan. 11.

Miscellaneous.

- Recent Progress in Applied Chemistry and in Engineering. James O. Handy. (58) Feb.
- Design of Retaining Walls. Alfred W. Hoffmann. (87) Serial beginning Mar.
- On the Physics of the Atmosphere.* W. J. Humphreys. (3) Mar.
- The Engineer in the Building of the Republic. Isham Randolph. (3) Mar.
- The Development of Research Work in Timber and Forest Products. E. Russell Burdon. (29) Mar. 7.
- Air Currents and Their Relation to the Acoustical Properties of Auditoriums, with Application of the Conclusions to Ventilating Systems.* F. R. Watson. (14) Mar. 8.
- Oil Pipe Lines in California.* B. K. Stroud. (13) Mar. 13.

Municipal.

- The Surface Dressing of Roads, the Tarflux Process.* (104) Feb. 28.
- Paving in Salt Lake City.* D. H. Blossom. (Paper read before the Utah Soc. of Engrs.) (1) Mar.
- European Practice in Testing Road Materials. M. A. Mesnager. (Paper read before the Inter. Assoc. for Testing Materials.) (67) Mar.
- Paving in Trenton, N. J., Under the New Commission.* Harry F. Harris. (60) Mar.
- Creosoted Wood Block Pavement in New York.* (60) Mar.
- Baltimore the City of Parks.* Stuart Stevens Scott. (60) Mar.
- Municipal Asphalt Plants; Cost of Operation and Estimates for the Establishment of a Plant for the District of Columbia. David E. McComb. (Report to the Commrs. of the District of Columbia.) (86) Mar. 5.

Mining—(Continued).

Municipal—(Continued).

- A Footway Tunnel in New York City. (13) Mar. 6.
 Some Features of Macadam Construction. T. R. Agg. (Paper read before the Am. Road Builders' Assoc.) (96) Mar. 6.
 Plant Equipment. F. E. Ellis. (Paper read before the Am. Road Builders' Assoc.) (96) Mar. 6.
 Riverbank Experimental Road.* (14) Mar. 8.
 Concrete Road Construction in Milwaukee County, Wis., and in Winona County, Minn. H. J. Knelling and O. B. Leland. (From papers read before the Minnesota and Wisconsin Soc. of Engrs.) (86) Mar. 12.
 Effect of Heavy Motor Traffic on Pavements. (86) Mar. 12.
 Repair and Maintenance of Roads. L. I. Hewes. (Paper read before the Ontario Good Roads Assoc.) (96) Mar. 13.
 Earth and Gravel Roads. Robert C. Terrell. (Paper read before the Am. Road Builders' Assoc.) (96) Mar. 13.
 Recent Motor Equipment in the New York Fire Department.* (11) Serial beginning Mar. 14.
 Methods and Costs of Constructing Three Types of Paving for Street Railway Tracks.* D. B. Davis. (86) Mar. 19.
 Some Costs on the Construction of Concrete Pavement. Carl M. Boynton. (Paper read before the Am. Soc. of Eng. Contractors.) (86) Mar. 19.
 Wood Paving with Lug-Blocks.* (13) Mar. 20.
 Good Roads in Ontario. W. A. McLean. (Paper read before the Ontario Good Roads Assoc.) (96) Mar. 20.
 Road Construction. A. McLean. (96) Mar. 20.
 Some Municipal Works and Practice in Leeds. W. T. Lancashire. (Paper read before the Inst. of Min. and County Engrs.) (104) Mar. 21.
 Karachi.* J. Forrest Brunton. (29) Mar. 21.
 A Classification of Road Building Rocks. Charles P. Berkey. (Paper read before the Am. Soc. for the Advancement of Science.) (86) Mar. 26.
 Building a Paved Roadway Across a Swamp. James Owen. (Abstract of paper read before the County Engrs. of New Jersey.) (13) Mar. 27.
 A Comparison of Recent Bids for Various Types of Paving in the New York Navy Yard. Walter H. Allen. (13) Mar. 27.
 City Pavements. G. G. Powell. (Abstract of paper read before the Ontario Good Roads Assoc.) (96) Mar. 27.
 Recommendations for Broad Street Paving, Newark. (14) Mar. 29.
 Standardizing Highway Construction.* Charles E. Foote. (46) Mar. 29.
 Central Purchase and Distribution of Supplies for New York City, Plan for Controlling and Standardizing Purchasing Methods of 128 Different Municipal Departments and Boards. (14) Mar. 29.
 Zur Geschichte der Ziegelstrasse in Berlin. Ernst Friedel. (80) Serial beginning Dec. 3.

Railroads.

- Rolling-Stock on the Principal Irish Narrow-Gauge Railways.* R. M. Livesey. (75) July.
 Hump vs. Flat Shunting. (Abstract from *North Eastern Railway Magazine*.) (23) Jan. 3.
 New Garratt Locomotives, Tasmanian Government Railways.* (23) Jan. 3.
 The Relaying and Improvement of the Berks & Hants Junction, Reading, Great Western Railway.* (23) Jan. 17.
 New Great Central Locomotive *Sir Sam Fay* to be Exhibited at the Ghent Exhibition.* (23) Jan. 17.
 Tables for Finding Proper Tonnage Rating; Acceleration and Retardation Figures, and Their Use in Solving Problems of Railway Location and Train Loading.* Paul M. La Bach. (23) Jan. 17.
 Rapid Acting Vacuum Brake Trials in Austria.* (23) Jan. 17.
 Electric Baggage Trucks.* (23) Jan. 24.
 Electrification of Heavy Grades, This May be Found Less Expensive than Grade Reduction.* C. L. de Mural. (23) Jan. 31.
 Heavy Tank Locomotive, Londonderry & Lough Swilly Railway.* (23) Jan. 31.
 Freight Train Control, North-Eastern Railway; Middlesbrough Division.* (23) Feb. 7; (22) Feb. 28.
 The "Safety First" Movement. Geo. Bradshaw. (61) Feb. 18.
 35-Ton Bogie Rail Wagons, Caledonian Railway.* (23) Feb. 21.
 Two European Single-Phase Railways: The Mittenwald Electric Railway and Rjukan Railway.* (26) Feb. 28.
 Circulation of Water in Locomotive Boilers.* George L. Fowler. (47) Feb. 28.
 Six-Coupled Bogie Express Locomotive for the Great Central Railway.* (11) Feb. 28.
 Railroad Accidents; Their Causes and Remedy. D. F. Jurgensen. (Paper read before the Civ. Engrs. Soc. of St. Paul.) (1) Mar.

*Illustrated.

Railroads (Continued).

- An Unusual Retaining Wall of Reinforced Concrete.* Albert J. Himes, M. Am. Soc. C. E. (36) Mar.
- Rail Creeping.* J. G. Van Zandt. (87) Mar.
- Safety on Railroads. J. W. Coon. (65) Mar.
- Centralia Terminal, I. C. R. R.* (87) Mar.
- Union Station, Fort Smith, Ark.* (87) Mar.
- Concrete Practice No. 6, Kansas City Southern Ry. Co.* A. M. Wolf. (87) Mar.
- Snow Hill Station, Great Western Railway.* R. P. Mears, Assoc. M. Inst. C. E. (Abstract of paper read before the Junior Inst. of Engrs.) (21) Mar.; (23) Jan. 24.
- Simplex Concrete Piles at Alost Station, Belgium.* E. Creplet. (From *Bulletin Technique du Cercle des Chefs de Section des Chemin de Fer de l'Etat.*) (21) Mar.
- Long Switches for Fast Running; Chemins de Fer du Nord.* (21) Mar.
- Automatic Block Signals on the Atlantic Coast Line R. R.* B. W. Meisel. (87) Mar.
- Assigning Cause of Failure in Rail Failure Reports. P. M. La Bach. (87) Mar.
- Canadian Pacific 4-6-2 Type Locomotive.* W. H. Winterrowd. (25) Mar.
- Locomotive Deck Shields.* Walter R. Hedeman. (25) Mar.
- Experimental Electric Locomotives in France. (25) Mar.
- Pittsburgh & Lake Erie Two Car Gas-Electric Car.* (25) Mar.; (18) Mar. 8.
- Locating Defective Car Wheels.* D. C. Buell. (25) Mar.
- The Gee Locomotive Stoker.* (25) Mar.; (15) Mar. 14.
- The Laying of Rails on Wooden Sleepers for Busy Express Lines.* C. W. Van Dyk. (Paper read before the Royal Institute of Dutch Engrs.; from *De Ingenieur.*) (88) Mar.
- Locomotive Development on the Prussian-Hessian State Railway and Some Results Obtained in Practice with Superheated-Steam Locomotives. E. Meyer. (From *Annalen für Gewerbe und Bauwesen.*) (88) Mar.
- Hardwood Pads for Railway Sleepers.* M. Matthaël. (From *Annalen für Gewerbe und Bauwesen.*) (88) Mar.
- The Karns Tunneling Machine.* O. J. Grimes. (13) Mar. 6.
- A Railway Grade Crossing with Steel Foundation.* (13) Mar. 6.
- Train Control on the Rhymney Railway.* (23) Mar. 7.
- Narrow Gauge Locomotive for the Rhodesian Railways.* (12) Mar. 7.
- Grand Trunk Terminal at Ottawa, Ont.* (15) Mar. 7.
- Fuel Oil Installations, Northern Pacific Ry.* (18) Mar. 8.
- Vital Factors in Car Economy. Chas. A. Lindstrom. (Abstract of paper read before the New England R. R. Club.) (18) Mar. 8.
- Scaling Mountain Peaks by Elevator.* (19) Mar. 8.
- Electric Railway in the French Pyrenees.* (27) Mar. 8.
- A New Single-Phase Railway in Norway. (12) Mar. 14.
- The Kiangsu-Chekiang Railways.* Lewis R. Freeman. (15) Mar. 14.
- Development in the Use of Screw Spikes.* (15) Mar. 14.
- Third and Fourth Track Construction.* (15) Mar. 14.
- Creosoting Plant near Connellsville, Pa.* (15) Mar. 14.
- Rebuilding of the Chicago Clearing Yard.* (18) Mar. 15; (15) Mar. 21.
- Construction Work of the Kansas City Terminal Ry.* (18) Mar. 15.
- Railway Terminals.* L. C. Fritch. (Paper read before the Canadian Ry. Club.) (18) Mar. 15.
- Wrecking Cars of 150 Tons' Capacity, Norfolk & Western Ry.* (18) Mar. 15.
- (15) Mar. 14.
- Maintenance of the Pennsylvania Railroad Electric Locomotives.* (17) Mar. 15.
- Experiences with Concrete Poles by the New York State Railways.* (17) Mar. 15.
- Standardization on the Michigan United Traction.* (17) Mar. 15.
- Road Improvements of the Northern Pacific Ry. in Washington.* (18) Mar. 15.
- Double-Tracking between Calgary and Vancouver. (14) Mar. 15.
- Drainage of a Railway Roadbed, Methods for Disposal of Surface and Subsurface Water. J. T. Bowser. (14) Mar. 15.
- Formulas for Radial Distances Between Curves (Railroad Structures).* George Paaswell. (13) Mar. 20.
- Concrete in Railroad Work. M. S. Long. (Paper read before the National Assoc. of Cement Users.) (96) Mar. 20.
- Novel Tunnel Work on the Cleveland Short Line Ry.* (13) Mar. 20.
- Mine Locomotives in the Dortmund District.* (57) Mar. 20.
- Arabia's Only Railway. (29) Mar. 21.
- Trussed-Concrete Construction in Railway Work, the Hy-Rib.* (23) Mar. 21.
- Postal Car Illumination Tests.* (15) Mar. 21.
- Important Improvement Work on the C., M. & St. P.* (15) Mar. 21; (18) Mar. 29.
- The Washington & Old Dominion Railway.* W. N. Smith. (17) Mar. 22.
- Analysis of the Determination of Economical Freight-Train Tonnages. (14) Serial beginning Mar. 22.
- Baldwin Locomotives Built During 1912. (15) Mar. 23.

*Illustrated.

Railroads—(Continued)

- Report on Glen Loch Deraillment. (Abstract of Report of the Interstate Commerce Comm.) (15) Mar. 28.
- Economical Limits of Grade Reduction. Walter Loring Webb. (15) Mar. 28.
- Express and Freight Traffic in Providence, R. I.* (17) Mar. 29.
- L'Eclairage par l'Acétylène Dissous des Voitures des Chemins de Fer du Sud de l'Autriche.* (33) Feb. 8.
- Die Mallet-Lokomotive der Harzquer- und Brockenbahn. Heinrich Papst. (48) Jan. 25.
- Schlafwagen III. Klasse der norwegischen Staatseisenbahnen.* P. Hoff. (48) Feb. 8.
- Die Staatsbahnen Bulgariens.* Franz Manek. (53) Feb. 14.
- Stossvorgang beim Auffahren eines Zuges auf einen Bremsschlitten.* F. Besser. (102) Serial beginning Feb. 15.
- Neue Erfahrungen mit Eisenbetonschwellen.* R. Bastian. (78) Serial beginning Feb. 26.
- Zahnrad-gegen Schubstangenmotor bei elektrischen Lokomotiven.* (41) Feb. 27.
- Formänderungen am schwebenden Schienenstosse.* E. C. W. van Dyk. (102) Mar. 1.
- Neuere Maschinen zum Schleifen von Achsschenkeln.* Simon. (102) Mar. 1.
- Zum Gotthardvertrag. (107) Mar. 8.
- Rutschung bei Hohenau auf der Südrampe der Lötschbergbahn.* (107) Mar. 15.
- Einrichtungen zur Ausbesserung der Rauch- und Ueberhitzer-Röhren der Heissdampf-lokomotiven.* Uhlmann. (102) Mar. 15.
- Bremsschlauch-Werkstatt der Süd-Pacific-Bahn in Los Angeles.* B. Schwarze. (102) Mar. 15.
- Zum Verhalten von Eisenbahnfahrzeugen in Gleisbogen.* Heumann. (102) Serial beginning Mar. 15.

Railroads, Street.

- Electrification of the Berlin City Circular and Suburban Railways. (23) Serial beginning Jan. 3.
- Hamburg Subway and Elevated Railway.* (17) Mar. 8.
- Gasoline Surface Cars in India.* (17) Mar. 8.
- Double-Deck Car for Washington.* (17) Mar. 8.
- Reinforced-Concrete Trolley Poles in Cleveland.* L. P. Crecellius. (Abstract from *Aera*.) (13) Mar. 13.
- Contracts Signed for New York Subways. (18) Mar. 15.
- Extensions of the Boston Subway.* (18) Mar. 15.
- Scientific Design of Carhouses and Shops; Methods Used in Planning an Electric Railway Maintenance Plant.* C. A. Neff and T. P. Thompson. (14) Mar. 15.
- (17) Mar. 15.
- Track Maintenance and Reconstruction in San Francisco.* (17) Mar. 15.
- Shops and Carhouses of the Hamburg Rapid Transit System.* (17) Mar. 15.
- Maintenance of Electrical Equipment of Cars in Brooklyn.* (17) Mar. 15.
- Fond du Lac Avenue Carhouse of the Milwaukee Electric Railway & Light Company.* (17) Mar. 15.
- Novel Oil House and Oil Delivery Car for the Chicago Railways.* (17) Mar. 22.
- Conveyor and Elevator Machinery for Subway Excavation. (14) Mar. 29.
- Experience with One-Man-Operated Cars. (17) Mar. 29.
- An Improved Type of Articulated Car.* (17) Mar. 29.
- New Cars for Liverpool.* (17) Mar. 29.
- The Lexington Avenue Subway Four-Track Under the Harlem River.* (46) Mar. 29.
- Die städtische Untergrundbahn in Berlin-Schöneberg.* Platzmann. (41) Serial beginning Mar. 6.

Sanitation.

- Street Cleaning in Downtown Chicago.* Richard T. Fox. (4) Feb.
- A Typical Rural Typhoid Fever Outbreak. John H. Mahon, Jr. (98) Feb.
- The National Aspect of the Reclamation of Swamp and Overflowed Lands. Edmund T. Perkins. (4) Feb.
- Provision of Institutions for the Treatment of Tuberculosis.* (104) Feb. 28.
- Modern Sewer Cleaning in Milwaukee, Wis.* Henry J. Kruse. (60) Mar.
- Cleaning the Sewage Tank at Galva, Ill.* Lloyd Z. Jones. (60) Mar.
- Hygienic Aspects of Gas. J. W. Graham. (Paper read before the Manchester and District Junior Gas Assoc.) (66) Mar. 4.
- Hygienic Equipment of a High School.* (101) Serial beginning Mar. 7.
- Air Currents and Their Relation to the Acoustical Properties of Auditoriums, with Application of the Conclusions to Ventilating Systems.* F. R. Watson. (14) Mar. 8.
- Relation of Pure Water to Typhoid Fever. (14) Mar. 8.
- The Design of and Methods and Cost of Construction by Force Account and Piece Work, a Sewerage System for a Small Town.* J. E. Tupper. (86) Mar. 12.
- Difficult Sewer Construction at West Liberty, Iowa.* Charles P. Chase. (Paper read before the Iowa Eng. Soc.) (14) Mar. 15.

*Illustrated.

Sanitation--(Continued).

- Effect of Hypochlorite Treatment at Evanston. W. Lee Lewis. (14) Mar. 15.
 Concrete Sewer-Pipe Tests in Kansas City.* E. S. Wallace. (13) Mar. 20.
 The Garrison Creek Storm Overflow Sewer in the City of Toronto.* Ray R. Knight. (96) Mar. 20.
 Temporary Hypochlorite Plant for Treating the Sewage of Norristown, Pa.* S. Cameron Corson. (13) Mar. 20.
 Plumbing in a Cincinnati Bath House.* (101) Mar. 21.
 Street Cleaning Methods in European Cities. (86) Mar. 26.
 New System of Ventilation for School Rooms.* (101) Mar. 28.
 Cincinnati Sewerage Investigations and Surveys. J. E. Root. (14) Mar. 29.
 Les Huitres et la Fièvre Typhoïde à Paris.* Paul Vincey. (92) Feb.
 Herstellung von Dränröhren.* C. Schimm. (80) Dec. 10.
 Die Fortschritte auf dem Gebiete des Volksbadewesens in den Vereinigten Staaten. Wilh. Paul Gerhard. (7) Feb. 15.
 Heizungs-, Lüftungs- und Dampfkraftanlagen in den Vereinigten Staaten von Amerika.* de Grahl. (7) Feb. 22.
 Gesundheitspflege beim Bau des Panamakanals. (7) Mar. 1.
 Niederdruckdampfheizung ohne Vertiefung der Kesselanlage mit selbsttätiger Rückspeisung.* Richard Wagner. (7) Mar. 1.
 Die Berechnung des Wärmebedarfes zur Beheizung von Wohnräumen. C. A. Gullino. (7) Mar. 1.
 Die Klärung des Abwassers in Schieferplattenkörpern.* Bach. (39) Mar. 5.
 Die Entlastung des Alsbachkanals.* Heinrich Stolz. (53) Serial beginning Mar. 7.

Structural.

- An Economical Design for a Timber Cotton Shed.* E. S. Pennebaker. (4) Feb.
 The Painting of Iron and Steel. (12) Serial beginning Feb. 28.
 Fire Protection for the Foundry. (108) Mar.
 Value of Washed Sand and Gravel in Concrete.* (67) Mar.
 Proportioning of Foundations for Columns and Walls. Ernest McCullough. (13) Mar. 6.
 Factory Building Equipment Details.* Harry C. Spillman. (20) Mar. 6.
 Hardpan and Other Soil Tests.* J. Norman Jensen. (13) Mar. 6.
 Buildings for Engineering Works. H. N. Allott, M. Inst. C. E. (Paper read before the Manchester Assoc. of Engrs.) (47) Mar. 7.
 The Tallest Office Building in the World, Erection of the Woolworth Building, New York.* (46) Mar. 8.
 New Specifications for Structural Steel Work (American Bridge Co.)* (14) Mar. 8.
 Industrial Plant with All Structures Built of Reinforced Concrete, Buildings Include Large Machine Shop with Sawtooth Construction.* W. J. Knight. (14) Mar. 8.
 Grandstand for the Brooklyn Baseball Club.* (14) Mar. 8.
 Building Tapering Concrete Chimneys.* D. D. Gill. (62) Mar. 10.
 Methods of Molding Reinforced Concrete Shells for Pier and Wharf Foundations at the Balboa Terminals, Panama. (86) Mar. 12.
 Miscellaneous Labor Costs of Excavation and Construction for a Manufacturing Plant. (86) Mar. 12.
 Structural Details and Cost of Constructing a Reinforced Concrete Sand Bin.* G. A. Flink. (86) Mar. 12.
 Test and Inspection of Bulb Pointed Concrete Piles for Building Foundation at North Billerica, Mass.* Hunley Abbott. (86) Mar. 12.
 Action of Acids, Oils and Fats on Concrete. (13) Mar. 13.
 Windbracing without Diagonals for Steel-Frame Office-Buildings.* R. Fleming. (13) Mar. 13.
 The Use of White Lead in Painting. Noel Heaton. (29) Mar. 14.
 The Corrosion of Aluminum. G. H. Bailey. (Paper read before the Inst. of Metals.) (11) Mar. 14.
 Methods of Fire Prevention, Excellent Work Done by the British Authorities. (19) Mar. 15.
 The Cost of a Brick House vs. One of Stucco.* Arthur W. Joslyn. (Paper read before the Building Brick Assoc. of America.) (76) Mar. 15.
 Steelwork of the Broadway Arsenal, Buffalo.* (14) Mar. 15.
 Reinforced Concrete Coal Trestle at Gilbertville, Massachusetts.* (14) Mar. 15.
 Constancy of Volume Accelerated Tests of Portland Cement. Max Gary. (Paper read before the Inter. Assoc. for Testing Materials.) (96) Mar. 20.
 Steel Forms for Concrete Construction. William Mayo Venable. (From *The Cement World*.) (96) Mar. 20.
 A Non-Corrosive Iron Alloy. (13) Mar. 20.
 Tests on Cast-in-Place Concrete Piles.* Francis L. Pruyn. (13) Mar. 20.
 Some Short-Cuts in Reinforced-Concrete Beam Design.* M. J. Lorente. (13) Mar. 20.

*Illustrated.

Sanitation—(Continued).

- Effect of Hydrophobic Treatment at Buxton, W. Yorkshire. (14) Mar. 25.
 Concrete Sewer-Pipe Tests in Kansas City. E. R. Wallace. (13) Mar. 20.
 The Garrison Creek Storm Overflow Sewer in the City of Toronto. Maj. R. Knight.
 (90) Mar. 20.
 Temporary Hydrophobic Plant for Treating the Sewage of Northtown, Pa. S. Cameron Gordon. (12) Mar. 20.
 Plumbing in a Cincinnati Bath House. (101) Mar. 20.
 Street Cleaning Methods in European Cities. (90) Mar. 20.
 New System of Ventilation for School Houses. (101) Mar. 20.
 Chemical-Sewerage Investigations and Reports. J. E. Root. (14) Mar. 20.
 Gas Holes in the Floor of a Bath. Paul Vinay. (92) Feb.
 Hauling of Sewage. C. Schmitt. (89) Dec. 10.
 The Treatment and Disposal of the Sewage in the Vereinigten Staaten.
 With Paul Gehard. (7) Feb. 10.
 Hauling, Pumping, and Disposal of Sewage in the Vereinigten Staaten von
 Amerika. de Gahl. (7) Feb. 10.
 Gesundheitswesen beim Bau des Kanals. (7) Mar. 1.
 Niederschlagswasser ohne Verlebung der Kanäle. (7) Mar. 1.
 Rückstrom. Richard Wagner. (7) Mar. 1.
 Die Bedeutung des Wasserbedarfs zur Bedienung von Wohnhäusern. G. A. Gollner.
 (7) Mar. 1.
 Die Reinigung des Abwassers in Selbstreinigungsanlagen. (10) Mar. 5.
 Die Reinigung des Abwassers. Richard Böck. (33) Sept. 1912.
 Mar. 7.
 Structural.
 An Economic Design for a Timber Grain Shed. E. R. Townsend. (4) Feb.
 The Treatment of Iron and Steel. (11) Sept. 1912.
 The Treatment of the Sewage. (100) Mar. 20.
 Value of Washing and the Effect of Chemicals. (107) Mar.
 Importance of Foundations for Columns and Walls. Ernest McGowan. (12)
 Mar. 6.
 Factory Building. Richard Deane. (14) Mar. 6.
 Hauling and Other Soil Tests. A. H. Allen. (13) Mar. 6.
 Building for Landreth Works. H. N. Allen. (14) Mar. 6.
 The Manchester Works. (14) Mar. 6.
 The Tallow Office Building in the World. (14) Mar. 6.
 New York. (14) Mar. 6.
 New Specimens for Structural Steel. (14) Mar. 6.
 Industrial Plant with All Structural Details. (14) Mar. 6.
 Industrial Plant with Sewage. (14) Mar. 6.
 Mar. 6.
 Groundwork for the Brooklyn Hospital. (14) Mar. 6.
 Building for the Brooklyn Hospital. (14) Mar. 6.
 Method of Making Reinforced Concrete Slabs for Pier and Wharf Foundations
 at the Harbor Terminal. (14) Mar. 6.
 Microscopic Labor Costs of Excavation and Construction for a Manufacturing
 Plant. (14) Mar. 6.
 Structural Details and Cost of Constructing a Reinforced Concrete Shed. (14) Mar. 6.
 A. H. Allen. (14) Mar. 6.
 Test and Inspection of High Poured Concrete Piers for Bridge Foundations at
 North River. (14) Mar. 6.
 Action of Acid and Water on Concrete. (14) Mar. 6.
 Windproofing without Windows for Steel Frame Office Buildings. R. F. Fennell.
 (14) Mar. 6.
 The Use of White Lead in Painting. (14) Mar. 6.
 The Corrosion of Aluminum. (14) Mar. 6.
 Methods of the Prevention of Rusting. (14) Mar. 6.
 Mar. 6.
 The Cost of a Steel House as One of Steel. (14) Mar. 6.
 Effect of Building Brick Acid on Aluminum. (14) Mar. 6.
 Steelwork at the Broadway. (14) Mar. 6.
 Reinforced Concrete Road Bridge at Haverhill. (14) Mar. 6.
 Quantity of Volume Associated with the Foundation. (14) Mar. 6.
 Road Bridge for the River. (14) Mar. 6.
 Steel Frame for Concrete. (14) Mar. 6.
 A New Concrete Road Bridge. (14) Mar. 6.
 Tests on Reinforced Concrete. (14) Mar. 6.
 Some Short-Cuts in Reinforced Concrete Design. M. J. Lammie. (13)
 Mar. 20.

*Illustrated.

Structural—(Continued).

- Imperfect Concrete Piles.* (14) Mar. 22.
 Novel Concrete Stairway at a German Exposition. (14) Mar. 22.
 Tests of Two Brick Piers of Unusual Size.* James E. Howard. (Abstract of paper read before the National Brick Manufacturers' Assoc.) (14) Mar. 22.
 A Comparative Test of Two Full-sized Reinforced-Concrete Flat-Slab Panels.* Henry T. Eddy. (13) Mar. 27.
 Layout and Building Details of a Machine Shop.* (14) Mar. 29.
 The Preservation Treatment of Wood with Water Gas Tar. Frank C. Mathers. (Paper read before the Indiana Gas Assoc.) (24) Serial beginning Mar. 31.
 Villa au Parc Saint-Maur (Seine).* Remson et Robine. (35) Mar.
 Le Nouveau Théâtre de Belleville à Paris.* (33) Mar. 8.
 Die Sicherheit von Mauern und verwandten Tragwerken gegen Erddruck, Wind- und Wasserdruk.* E. Elwitz. (81) Pt. 1.
 Ueber Rahmenträger und ihre Beziehungen zu den Fachwerktägern.* Fr. Engesser. (81) Pt. 1.
 Sprengwände in Eisenbeton.* H. W. K. Ziesemer. (80) Nov. 16.
 Aschenstein-Herstellung.* (80) Dec. 14.
 Prüfung von Gesteinsbohrmaschinen. (80) Dec. 19.
 Die Erweiterungsbauten des Getreidespeichers in Königsberg ausgeführt von Amme. Giesecke & Konegen A.-G. in Braunschweig.* M. Buhle. (48) Jan. 11.
 Knickversuche mit einer Strebe des Eingestürzten Hamburger Gasbehälters.* H. Rudeloff. (69) Feb.
 Die Normaleprofile für Walzisen zu Bauzwecken vom Standpunkt der Eisenkonstrukturen; Kritik und Vorschläge.* Franz Czech. (69) Feb.
 Ueber Knickfestigkeit und einseitig gedrückte Stäbe. Müller-Breslau. (69) Feb.
 Ursprungsfestigkeit und statische Festigkeit, eine Studie über Ermüdungsercheinungen.* P. Ludwig. (48) Feb. 8.
 Das Rosten des Eisens, seine Ursachen und seine Verhütung durch Anstriche.* Georg Pfeleiderer. (48) Feb. 8.
 Ueber die Wirkung des Auftriebes unter Pfeilern.* Zimmermann. (40) Feb. 15.
 Der Entwurf eines preussischen Wohnungsgesetzes. A. Reich. (39) Feb. 20.
 Eisenbetonarbeiten in der Volksbade- und Schwimmanstalt in Gladbeck i. W.* Paul Müller. (51) Serial beginning Feb. 22.
 Beitrag zur Berechnung steifer Rahmenkonstruktionen.* A. Franke. (78) Feb. 26.
 Moderne Betonwächterhäuser.* Frank C. Perkins. (78) Feb. 26.
 Bau eines Zementsilos in Gollerschau.* Franz Böhm. (78) Feb. 26.
 Die Abbruchkosten von Eisenbetonbauten. Ernst Schick. (78) Feb. 26.
 Neue Schraubenspannplatte für Gleise, Hochbau, Kranbau, Luft- und Erdfahrzeuge, Maschinen, Geräte usw. (53) Feb. 21.
 Zur Statischen Berechnung des Vollwandigen Bogenträgers mit zwei Gelenken.* Siegmund Schwätzer. (69) Mar.
 Der Gegenwärtige Stand des Materialprüfmaschinenbaues.* Max Kurrein. (69) Serial beginning Mar.
 Berechnung gewölbter Platten.* Huldreich Keller. (107) Serial beginning Mar. 1.
 Das neue Rathaus in Döbeln.* Hugo Licht. (51) Mar. 12.
 Die Tischlereihalle A. M. Luther in Reval.* O. Lüscher. (78) Mar. 14.
 Die Schweiz Nationalbank in Bern.* Ed. Joos. (107) Mar. 15.

Topographical.

- Azimuth by Direct Solar Observation.* Louis Ross. (13) Mar. 6.
 Stereophotographic Surveying.* Otto Lemberger. (13) Mar. 27.
 Topographie und Reliefkunst.* F. Becker. (107) Mar. 15.

Water Supply.

- Southampton's Open-Air Swimming Bath.* J. A. Crowther. (104) Feb. 28.
 The Arnberg Hydro-Electric Power Station.* (12) Feb. 28.
 Reinforced Concrete Stand Pipe at Belton, Texas.* Thomas L. Fountain, Assoc. Am. Soc. C. E. (36) Mar.
 Failure of Nashville Reservoir.* (60) Mar.
 The Georgetown Reservoir.* J. J. Bain. (100) Mar.
 A Big Irrigation Dam and Koppel Cars. (67) Mar.
 The Suitability of Internal Combustion Engines for Service in Small Water Works Plants. George A. Main. (86) Mar. 5.
 A Discussion of the Problems Connected with the Effort to Establish Standards for the Hygienic Purity of Public Water Supplies. Joseph W. Ellms. (Paper read before the Indiana San. and Water Supply Assoc.) (86) Mar. 5.
 The Danger of Physical Cross Connection Between Public and Private Water Supply Systems, A Suggested Mechanical Safeguard.* H. E. Jordan. (Paper read before the Indiana Sanitary and Water Supply Assoc.) (86) Mar. 5; (14) Mar. 29.
 The Moose Jaw Water Supply. P. Gillespie. (96) Mar. 6.
 The Rational Use of Water in Irrigation. John A. Widstoe. (Abstract of paper read before the National Irrig. Congress.) (96) Mar. 6.

*Illustrated.

- Structural—(Continued).
- Important Concrete Piers. (144) Mar. 22
 New Concrete Piers at a German Port. (145) Mar. 22
 Tests of Two High Piers at German Port. (146) Mar. 22
 Read before the National French Municipalities Assoc. (147) Mar. 22
 A Comparative Test of Two Reinforced Concrete Pier-Ship Piers. (148) Mar. 22
- Latent and Hidden Defects of a Machine. (149) Mar. 22
 The Prevention of Latent and Hidden Defects. (150) Mar. 22
 (Paper read before the Institute of Mechanical Engineers, London, 1912.)
 Villa at Paris Hotel-Restaurant. (151) Mar. 22
 In the New Hotel-Restaurant at Paris. (152) Mar. 22
 The Structure of the Hotel-Restaurant at Paris. (153) Mar. 22
 and Waterworks. (154) Mar. 22
 Under the Hotel-Restaurant at Paris. (155) Mar. 22
- Spontaneous Combustion in Kerosene. (156) Mar. 22
 Spontaneous Combustion in Kerosene. (157) Mar. 22
 Spontaneous Combustion in Kerosene. (158) Mar. 22
 Spontaneous Combustion in Kerosene. (159) Mar. 22
 Spontaneous Combustion in Kerosene. (160) Mar. 22
 Spontaneous Combustion in Kerosene. (161) Mar. 22
 Spontaneous Combustion in Kerosene. (162) Mar. 22
 Spontaneous Combustion in Kerosene. (163) Mar. 22
 Spontaneous Combustion in Kerosene. (164) Mar. 22
 Spontaneous Combustion in Kerosene. (165) Mar. 22
 Spontaneous Combustion in Kerosene. (166) Mar. 22
 Spontaneous Combustion in Kerosene. (167) Mar. 22
 Spontaneous Combustion in Kerosene. (168) Mar. 22
 Spontaneous Combustion in Kerosene. (169) Mar. 22
 Spontaneous Combustion in Kerosene. (170) Mar. 22
 Spontaneous Combustion in Kerosene. (171) Mar. 22
 Spontaneous Combustion in Kerosene. (172) Mar. 22
 Spontaneous Combustion in Kerosene. (173) Mar. 22
 Spontaneous Combustion in Kerosene. (174) Mar. 22
 Spontaneous Combustion in Kerosene. (175) Mar. 22
 Spontaneous Combustion in Kerosene. (176) Mar. 22
 Spontaneous Combustion in Kerosene. (177) Mar. 22
 Spontaneous Combustion in Kerosene. (178) Mar. 22
 Spontaneous Combustion in Kerosene. (179) Mar. 22
 Spontaneous Combustion in Kerosene. (180) Mar. 22
 Spontaneous Combustion in Kerosene. (181) Mar. 22
 Spontaneous Combustion in Kerosene. (182) Mar. 22
 Spontaneous Combustion in Kerosene. (183) Mar. 22
 Spontaneous Combustion in Kerosene. (184) Mar. 22
 Spontaneous Combustion in Kerosene. (185) Mar. 22
 Spontaneous Combustion in Kerosene. (186) Mar. 22
 Spontaneous Combustion in Kerosene. (187) Mar. 22
 Spontaneous Combustion in Kerosene. (188) Mar. 22
 Spontaneous Combustion in Kerosene. (189) Mar. 22
 Spontaneous Combustion in Kerosene. (190) Mar. 22
 Spontaneous Combustion in Kerosene. (191) Mar. 22
 Spontaneous Combustion in Kerosene. (192) Mar. 22
 Spontaneous Combustion in Kerosene. (193) Mar. 22
 Spontaneous Combustion in Kerosene. (194) Mar. 22
 Spontaneous Combustion in Kerosene. (195) Mar. 22
 Spontaneous Combustion in Kerosene. (196) Mar. 22
 Spontaneous Combustion in Kerosene. (197) Mar. 22
 Spontaneous Combustion in Kerosene. (198) Mar. 22
 Spontaneous Combustion in Kerosene. (199) Mar. 22
 Spontaneous Combustion in Kerosene. (200) Mar. 22
- Water Supply.
- Southampton's Open-Air Reservoir. (201) Mar. 22
 The Atlantic Light-Electric Power Station. (202) Mar. 22
 Electric Power Station at Southampton. (203) Mar. 22
 The Atlantic Light-Electric Power Station. (204) Mar. 22
 The Atlantic Light-Electric Power Station. (205) Mar. 22
 The Atlantic Light-Electric Power Station. (206) Mar. 22
 The Atlantic Light-Electric Power Station. (207) Mar. 22
 The Atlantic Light-Electric Power Station. (208) Mar. 22
 The Atlantic Light-Electric Power Station. (209) Mar. 22
 The Atlantic Light-Electric Power Station. (210) Mar. 22
 The Atlantic Light-Electric Power Station. (211) Mar. 22
 The Atlantic Light-Electric Power Station. (212) Mar. 22
 The Atlantic Light-Electric Power Station. (213) Mar. 22
 The Atlantic Light-Electric Power Station. (214) Mar. 22
 The Atlantic Light-Electric Power Station. (215) Mar. 22
 The Atlantic Light-Electric Power Station. (216) Mar. 22
 The Atlantic Light-Electric Power Station. (217) Mar. 22
 The Atlantic Light-Electric Power Station. (218) Mar. 22
 The Atlantic Light-Electric Power Station. (219) Mar. 22
 The Atlantic Light-Electric Power Station. (220) Mar. 22
 The Atlantic Light-Electric Power Station. (221) Mar. 22
 The Atlantic Light-Electric Power Station. (222) Mar. 22
 The Atlantic Light-Electric Power Station. (223) Mar. 22
 The Atlantic Light-Electric Power Station. (224) Mar. 22
 The Atlantic Light-Electric Power Station. (225) Mar. 22
 The Atlantic Light-Electric Power Station. (226) Mar. 22
 The Atlantic Light-Electric Power Station. (227) Mar. 22
 The Atlantic Light-Electric Power Station. (228) Mar. 22
 The Atlantic Light-Electric Power Station. (229) Mar. 22
 The Atlantic Light-Electric Power Station. (230) Mar. 22
 The Atlantic Light-Electric Power Station. (231) Mar. 22
 The Atlantic Light-Electric Power Station. (232) Mar. 22
 The Atlantic Light-Electric Power Station. (233) Mar. 22
 The Atlantic Light-Electric Power Station. (234) Mar. 22
 The Atlantic Light-Electric Power Station. (235) Mar. 22
 The Atlantic Light-Electric Power Station. (236) Mar. 22
 The Atlantic Light-Electric Power Station. (237) Mar. 22
 The Atlantic Light-Electric Power Station. (238) Mar. 22
 The Atlantic Light-Electric Power Station. (239) Mar. 22
 The Atlantic Light-Electric Power Station. (240) Mar. 22
 The Atlantic Light-Electric Power Station. (241) Mar. 22
 The Atlantic Light-Electric Power Station. (242) Mar. 22
 The Atlantic Light-Electric Power Station. (243) Mar. 22
 The Atlantic Light-Electric Power Station. (244) Mar. 22
 The Atlantic Light-Electric Power Station. (245) Mar. 22
 The Atlantic Light-Electric Power Station. (246) Mar. 22
 The Atlantic Light-Electric Power Station. (247) Mar. 22
 The Atlantic Light-Electric Power Station. (248) Mar. 22
 The Atlantic Light-Electric Power Station. (249) Mar. 22
 The Atlantic Light-Electric Power Station. (250) Mar. 22

Water Supply—(Continued).

- The Reclamation of Ancient Babylonia by Irrigation.* Edgar J. Banks. (13) Mar. 6.
- Relations of Pure Water to Typhoid Fever. (14) Mar. 8.
- Functions of a Technical Staff in the Regulation of Public Utilities. W. D. Pence. (Abstract of paper read before the Indiana Sanitary and Water Supply Assoc.) (14) Mar. 8.
- Rapid Filtration Plant at Columbus, Indiana, Notched Wash-Water Troughs and a Deep Bed of Gravel are Being Used.* (14) Mar. 8; (86) Mar. 5.
- A Great Pacific Service Project, the South Yuba and Bear River Hydro-Electric Development.* James H. Wise. (From *Pacific Gas and Electric Magazine*.) (19) Mar. 8.
- Drinking Water Systems.* S. M. Weinthal. (64) Mar. 11.
- The Problem of Interstate Swamp Drainage, the Dismal Swamp.* M. O. Leighton. (86) Mar. 12.
- Some Recent Advances in Rapid Filter Design. F. B. Leopold. (Abstract of paper read before the Indiana San. and Water Supply Assoc.) (86) Mar. 12.
- The Experience of the State of Illinois with the Shallow Well. Edward Bartow. (Paper read before the Indiana San. and Water Supply Assoc.) (86) Mar. 12.
- Methods of Estimating the Probable Volume of Silt Deposits in River Storage Reservoirs for the Oklahoma City Water Supply. Hiram Phillips, John W. Alvord and J. W. Billingsley. (From Report to the Mayor of Oklahoma City.) (86) Mar. 12.
- What is the Public Doing Toward Conservation by Developing Water Power? Robert C. Barnett. (86) Mar. 12.
- Data on Rock Drilling Operations at the Kensico Dam, New York Improved Water Supply. Frank Richards. (From *Compressed Air Magazine*.) (86) Mar. 12.
- Twin Falls, Oakley Irrigation Project.* A. M. Korsmo. (13) Mar. 13.
- A New Module or Constant-Discharge Device for Irrigation Works.* (13) Mar. 13.
- City Water-Waste. (96) Mar. 13.
- Surplus Waters of the Los Angeles Aqueduct.* Burt A. Heinly. (13) Mar. 13.
- Water-Waste Reduction by Meters in Kalamazoo. George Houston. (Paper read before the Mich. Eng. Soc.) (14) Mar. 15.
- Duty of Water for Irrigation, Amount and Character of Water Losses as Determined by Extensive Studies in Idaho. Don H. Bark. (Abstract from Annual Report, State Engr. of Idaho.) (14) Mar. 15.
- Effect of Hypochlorite Treatment at Evanston. W. Lee Lewis. (14) Mar. 15.
- The 10 000-Horsepower Turbines at Keokuk, Description of the Design, Manufacture and Transportation of the Largest Water-Wheels Ever Built.* Chester W. Larner. (14) Mar. 15; (20) Mar. 13.
- Pumping Water to Increase the Supply for a Hydro-electric Plant, Augmenting a High-Head Flow by a Comparatively Low Lift.* M. B. Lott. (14) Mar. 15; (27) Mar. 15.
- The Present Condition of Small Water Purification Plants in Illinois, Fault in Design and Operation. Ralph Hilscher. (Paper read before the Illinois Water Supply Assoc.) (86) Mar. 19.
- The Special Features of the Recent Water Works Improvements at Rushville, Ill. F. H. Coult. (Paper read before the Illinois Water Supply Assoc.) (86) Mar. 19.
- Water Hammer Relieved by Air Chambers on Pipe Line at Woodsfield, Ohio. R. W. Kinney. (86) Mar. 19.
- The Importance of Water Waste Investigations in the Smaller Cities and Towns. W. D. Gerber. (Abstract of paper read before the Illinois Water Supply Assoc.) (86) Mar. 19.
- Practical Methods for Obtaining High Efficiency in Water Works Pumping Plants. Seabury G. Pollard. (Paper read before the Illinois Water Supply Assoc.) (86) Mar. 19.
- Proposed South Saskatchewan River Diversion Canal.* (For Water Supply for Regina and Moose Jaw.) F. M. Peters. (96) Mar. 20.
- Western Canada Power Company's Hydro-Electric Plant at Stane Falls, B. C.* (96) Mar. 20.
- Irrigation Surveys and Water Powers. F. H. Peters. (Report to the Government.) (96) Mar. 20.
- London's Water Supply.* (New Reservoir at Chingford.) (104) Mar. 21; (66) Mar. 18; (12) Mar. 14; (11) Mar. 14.
- The Water Supply of Devonport. F. W. Lillcrap. (Abstract of paper read before the Royal Sanitary Institute.) (104) Mar. 21.
- The Drainage of Egypt. Sir Hanbury Brown. (12) Serial beginning Mar. 21.
- An Irrigation Pumping Plant at Mercedes, Texas.* (14) Mar. 22.
- Water Supply of Provo, Utah.* (14) Mar. 22.
- Nisqually River Pipe-Line Bridge.* (14) Mar. 22.
- Elimination of Tastes from Chlorinated Water, Experience in Treating Lake Michigan Water After Disinfection with Hypochlorite of Lime, with Sodium Thiosulphate. Arthur Lederer and Frank Bachmann. (Abstract of paper read before the Ill. Water Supply Assoc.) (14) Mar. 22.

*Illustrated.

Water Supply—(Continued).

- The Reclamation of Arsenic Deposits by Treatment. Edgar J. Parker. (15)
 Mar. 5
 Reclamation of Pure Water to Supply Town. (14) Mar. 5
 Functions of a Technical Staff in the Reclamation of Public Utilities. W. D. Foster.
 (Abstract of paper read before the Industrial Sanitary and Water Supply Assoc.)
 (14) Mar. 5
 Rapid Filtration of Water at Cambridge Station, Northern Wash-Water Treatment and a
 High Rate of Filtration. (14) Mar. 5; (14) Mar. 5
 A Great Public Health Problem. The South York and West River Water-Bodies.
 (Abstract of paper read before the Industrial Sanitary and Water Supply Assoc.)
 (14) Mar. 5
 Distribution of Water Systems. S. M. Weinstein. (14) Mar. 11
 The Problem of Industrial Wastewater. The Illinois River. M. O. Leighton.
 (14) Mar. 11
 Some Recent Advances in Rapid Water Treatment. W. D. Foster. (Abstract of paper
 read before the Industrial Sanitary and Water Supply Assoc.) (14) Mar. 11
 The Experience of the State of Illinois with the South-West. Edwards. (14)
 (Paper read before the Industrial Sanitary and Water Supply Assoc.) (14)
 Mar. 11
 Methods of Estimating the Probable Volume of Run-off in River Storage
 Reservoirs for the Oklahoma City Water Supply. William Phillips. John W.
 Adams and J. W. Hildreth. (Paper read before the Industrial Sanitary and Water Supply Assoc.)
 (14) Mar. 11
 What is the Public Doing Toward Conservation by Developing Water Power? Robert
 C. Barnett. (14) Mar. 11
 Data on Rock Drilling Operations at the Kansas City, New York Improved Water
 Supply. Frank Roberts. (Paper read before the Industrial Sanitary and Water Supply Assoc.)
 (14) Mar. 11
 A New Method of Conserving Water for Irrigation Works. (14) Mar. 11
 City Water-Works. (14) Mar. 11
 Supplying Water of the Los Angeles Aqueduct. (14) Mar. 11
 Water-Waste Reduction by Means of Reclamation. George Houston. (Paper read
 before the Industrial Sanitary and Water Supply Assoc.) (14) Mar. 11
 Out of Water for Irrigation. Amount and Character of Water Losses as Determined
 by Evaporation Studies at Idaho. Don H. Mack. (Abstract from Annual Report,
 State Dept. of Labor.) (14) Mar. 11
 Effect of Hydrochloric Treatment at Kansas. W. Lee Lewis. (14) Mar. 11
 The 10,000-Horsepower Turbine at Kansas. Investigation by the Kansas Reclamation
 and Transportation of the Kansas Water-Waste River. Charles W.
 Latham. (14) Mar. 11; (14) Mar. 11
 Pumping Water to Increase the Supply for a Hydroelectric Plant. Armstrong. (14)
 (14) Mar. 11
 High-Rate Flow by a Compressible Low-Loss. M. H. Lee. (14) Mar. 11
 The Present Condition of Small Water Distribution Works in Illinois. Paul J. De-
 stine and O. H. Hildreth. (Paper read before the Industrial Sanitary and Water Supply Assoc.)
 (14) Mar. 11
 The Small Water-Waste in the Kansas Water-Waste River. (14) Mar. 11
 L. J. Cullen. (Paper read before the Industrial Sanitary and Water Supply Assoc.) (14)
 Mar. 11
 Water Hammer Caused by Air Entrapped on the Line at Woodstock, Ohio. H. W.
 Kline. (14) Mar. 11
 The Importance of Water-Waste Investigations in the Smaller Cities and Towns.
 W. D. Foster. (Abstract of paper read before the Industrial Sanitary and Water Supply Assoc.)
 (14) Mar. 11
 Practical Methods for Estimating High Efficiency in Water-Waste Pumping Plants.
 Richard G. Pollard. (Paper read before the Industrial Sanitary and Water Supply Assoc.)
 (14) Mar. 11
 Proposed South Kansas River Division Canal. (14) Mar. 11
 and Moore. (14) Mar. 11
 Western Canada Power Company. Hydro-Electric Plant at Stone Falls, B. C.
 (14) Mar. 11
 Irrigation Surveys and Water Power. F. H. Peters. (Report to the Government.)
 (14) Mar. 11
 London's Water Supply. (14) Mar. 11
 The Water Supply of London. F. W. Lillie. (Abstract of paper read before
 the Royal Sanitary Institute.) (14) Mar. 11
 The Importance of High Efficiency in Water-Waste Pumping Plants.
 An Investigation of the Water-Waste Pumping Plant at Stone Falls, B. C.
 (14) Mar. 11
 Water Supply of Stone Falls, B. C. (14) Mar. 11
 Niagara River Power Plant. (14) Mar. 11
 Examination of Notes from the Industrial Water-Waste Pumping Plant at Stone Falls, B. C.
 and Water. (14) Mar. 11
 Niagara River Power Plant. (14) Mar. 11
 before the Industrial Sanitary and Water Supply Assoc. (14) Mar. 11

Water Supply—(Continued).

- The Samnanger Hydroelectric Plant; High-Head Development Built by the City of Bergen, Norway.* (14) Mar. 22.
- Mount Hood Hydroelectric Developments.* W. P. Brereton and R. H. Mulock. (27) Serial beginning Mar. 22.
- Appalachian Hydro-Electric Development.* Warren O. Rogers. (64) Mar. 25.
- The Public Control of Non-Navigable Streams from a Sanitary Standpoint. H. N. Ogden. (Paper read before the Cleveland Eng. Soc.) (86) Mar. 26.
- A Study of the Efficiency of Coagulating Basins.* W. F. Monfort. (Paper read before the Illinois Water Supply Assoc.) (86) Mar. 26.
- The Principal Features of Design and Construction of the New Water Supply System for Moose Jaw, Saskatchewan.* Walter J. Francis. (Report to the City of Moose Jaw.) (86) Mar. 26.
- The Use of Permutit in Water Softening. J. F. Garrett. (Paper read before the Illinois Water Supply Assoc.) (86) Mar. 26.
- The Detection of Uncalked Joints in an Intake Pipe Line by Determining Solids and Sulphates in the Water. W. M. Cobleigh. (Paper read before the Illinois Water Supply Assoc.) (86) Mar. 26.
- A Small Water Works Plant for Kingsburg, Calif.* C. F. Braun. (13) Mar. 27.
- Boring and Grouting a Fissured Foundation beneath an Embankment: Methods Used on the Lahontan Dam of the Truckee-Carson Project.* D. W. Cole. (14) Mar. 29.
- Operating Results of Terre Haute Filters. (14) Mar. 29.
- Test of the 6 000-Horsepower Turbines of the Appalachian Power Company. Single-Runner Francis Turbines Developing 93.7 Per Cent. Efficiency. H. P. Rust. (14) Mar. 29; (27) Mar. 29.
- The Great Irrigation Project at Strawberry Valley.* Newton Forest. (46) Mar. 29.
- Solid Timber Arch Dam.* R. A. Lundquist. (27) Mar. 29; (14) Mar. 29.
- Pose et Joints des Tuyaux en Béton.* (84) Feb.
- Wirtschaftlichkeitsnachrechnungen an ausgeführten Wasserkraftanlagen. D. Rümelin. (81) Pt. 1.
- Die "energetische Beobachtung" im Flussbau nach dem Prinzip des Maximums. C. Krischan. (53) Feb. 14.
- Talsperren.* (7) Feb. 15.
- Die geplanten Argen-Werke in Oberschwaben.* Hermann Werner. (51) Serial beginning Feb. 26.
- Die Wasserkraftanlage Eglsau.* (107) Mar. 8.
- Wasserversorgung der Stadt Chemnitz.* Nau. (51) Serial beginning Mar. 12.
- Die Wasserkraftanlage am Mississippifluss, das grösste hydro-elektrische Kraftwerk der Welt.* Frank C. Perkins. (78) Serial beginning Mar. 14.

Waterways.

- New Graving Dock, Belfast.* W. Redfern Kelly. (75) July.
- Public Utility Regulation and Its Relation to Water Conservation.* Morris Knowles. (58) Jan.
- Handling Traffic at Immingham Dock.* (23) Jan. 3.
- Improvement of Rivers.* Wm. W. Harts, M. Am. Soc. C. E. (100) Mar.
- Ohio River Dam No. 48.* J. C. Oakes, M. Am. Soc. C. E. (100) Mar.
- Break in the Illinois and Mississippi Canal at Aqueduct 4.* Charles Keller, M. Am. Soc. C. E. (100) Mar.
- New Dipper Dredges for the Panama Canal. (86) Mar. 5.
- The Illinois Waterway, the Projects for a Barge Canal from Chicago to the Mississippi River. Isham Randolph. (86) Mar. 5.
- The Improvement of the Neponset River in Massachusetts.* Edmund M. Blake. (86) Mar. 12.
- A Discussion of the Economics of Constructing Cut-Offs Instead of Enlarging Original Channel in River Improvements for Drainage and Flood Control.* Wm. R. Hoag. (Paper read before the Minnesota Soc. of Engrs.) (86) Mar. 12.
- Bulkhead and Pier for the New Port of San Diego, Calif.* (13) Mar. 13.
- Concrete Bank Protection for Deep Rivers.* B. Okazaki. (13) Mar. 13.
- Knights Landing Cut Project in the Sacramento Valley, Proposed By-Pass to Divert Part of the Flow of the Sacramento River to Prevent Flooding of Cultivated Land. (14) Mar. 15.
- The Ambrose Channel as Measured by the Panama Canal.* (46) Mar. 15.
- Unique Construction Methods and Devices Employed at Lock and Dam No. 1, Mississippi River Improvement.* (86) Mar. 19.
- Methods and Results of Testing a Reinforced Concrete Floor 80 by 325 by 3½ Ft. for a Ship Lock. Adolph Meyer. (Paper read before the Minnesota Soc. of Engrs. and Surveyors.) (86) Mar. 19.
- The Proposed Rehabilitation of the Illinois and Michigan Canal in Illinois. (86) Mar. 19.
- The Improvement of the Cuyahoga River at Cleveland, Ohio.* (13) Mar. 20.

Waterways--(Continued).

- Third American Lock at Sault Ste. Marie, Michigan.* Reginald E. Hore. (82) Mar. 22.
- Measuring the Flow of a Stream.* Richard Hamilton Byrd. (46) Mar. 22.
- Cost of Year's Operation of Marine Plant for Construction of Lincoln Park Extension, Chicago, Ill.* (For Dredging). (86) Mar. 26.
- Portable Concrete Mixing Plants on the Panama Canal.* (18) Mar. 29.
- La Houille Verte et les Travaux de M. Bresson.* Lévy-Salvador. (92) Feb.
- Note sur le Barge-Canal—Canal d'Erie.* W. M. Mead. (30) Feb.
- Der Ausbau des Hafens von Antwerpen.* W. Kaemmerer. (48) Jan. 11.
- Fortschritte und Bestrebungen auf dem Gebiete der Fördertechnik in Häfen. C. Michenfelder. (48) Serial beginning Feb. 8.
- Ueber Volumänderungen im Beton und dabei auftretende Anstrengungen in Beton und Eisenbeton.* (51) Feb. 22.
- Wehre und Schleusen in der oberen schiffbaren Spree.* Papke. (40) Feb. 22.
- Bericht der von der "Zuiderzee-Vereinigung" ernannten "Eisenbeton-Kommission." (78) Feb. 26.
- Versuche über den Reibungswiderstand zwischen strömendem Wasser und Bettsohle.* H. Engels. (40) Mar. 1.
- Betriebsergebnisse von Baggerarbeiten. (40) Mar. 12.

*Illustrated.